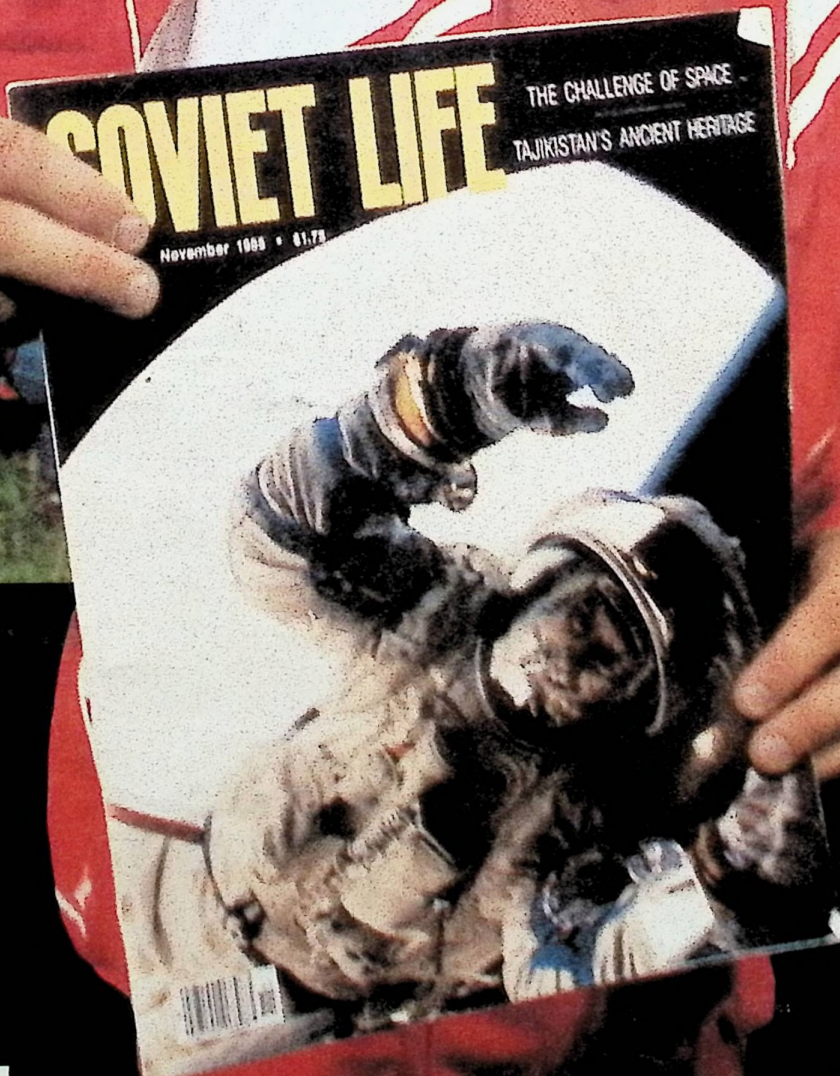
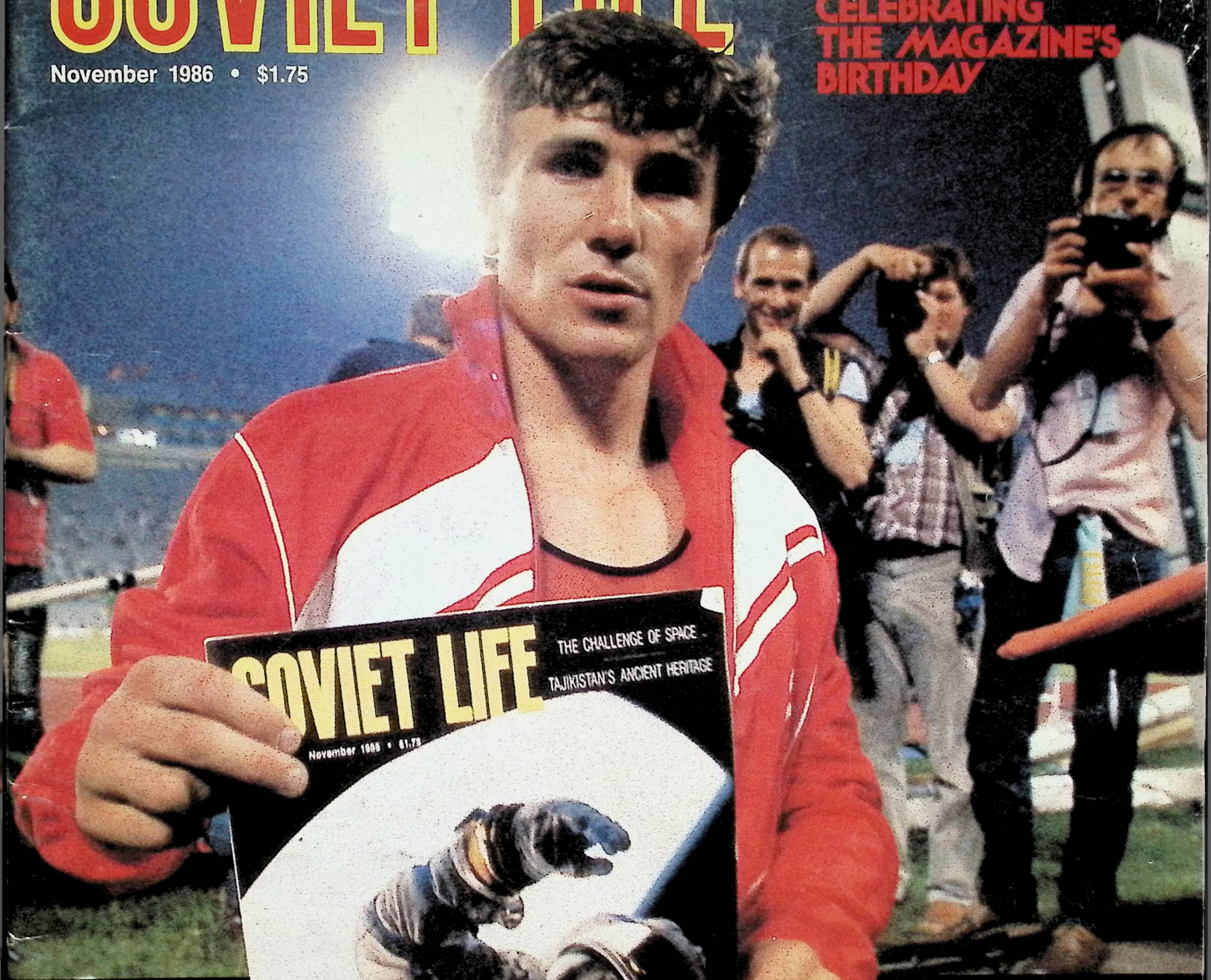


SOVIET LIFE

November 1986 • \$1.75

30 YEARS:
CELEBRATING
THE MAGAZINE'S
BIRTHDAY



USSR MORATORIUM ON NUCLEAR TESTS
EXTENDED AGAIN.
Gorbachev's TV address on p. 1.



SOVIET LIFE

The magazine SOVIET LIFE is published by reciprocal agreement between the governments of the United States and the Soviet Union. The agree-

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EDITOR'S NOTES

PEOPLE SAY YOU reach maturity at age 30. The same could be said of our magazine, too. Over the past 30 years it has become established and has developed its own distinctive features and large readership.

It all began in November 1956 when the magazine USSR Illustrated Monthly—later renamed SOVIET LIFE Illustrated Monthly, and still later just SOVIET LIFE—first appeared on newsstands in some American cities. Americans were surprised to see it standing alongside U.S. publications. Gradually, more and more people became aware of its existence, and interest and curiosity prevailed over stereotyped thinking. Now many Americans tell us they simply love the magazine because it remains a reliable source of information about the USSR and about relations between the Soviet and the American people.

Here's what Allan Bowhill, from Urbana, Illinois, writes: "I feel that SOVIET LIFE is of great value to Americans in that it is the only Russian publication available to us that is written and produced by Soviet people. Not only does SOVIET LIFE help to satisfy one's curiosity about the USSR in a unique way, but more importantly, it makes one feel a little more confident about the future by the very fact that it exists and is accessible to us."

Henry and Carol Hicks of New York say, "The present publication and circulation of SOVIET LIFE in the USA and AMERICA in the USSR help to bring understanding between the people of our two countries."

Our readers are right—the credo of the magazine lies in promoting contacts and understanding among people.

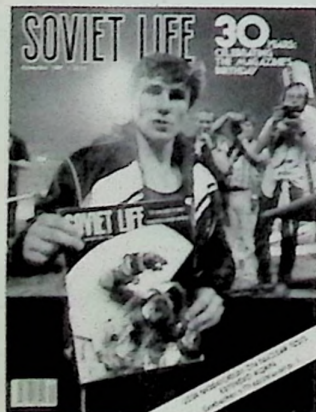
Lately we've been writing a lot about a new way of thinking in the nuclear age, a way of thinking that's essential for the survival of humankind and the progress of civilization. Mikhail Gorbachev's televised address of August 18, which begins on p. 1, is a vivid example of this new type of thinking. The Soviet leader clearly sets down the basic principles of a new approach to international affairs, the principles that determine Soviet foreign policy. Among these are the total rejection of war as an instrument of politics and the understanding that security can only be mutual, meeting the needs of both sides in equal measure. This means we must begin viewing our planet as a complex world, torn by division, but one that is entirely interdependent.

What's most important, though, is the well-founded decision, laid out in the statement, to extend, once again, our unilateral nuclear test ban. This is a graphic example of how our new political thinking is being applied in practical politics.

Since August of 1985 the USSR has not conducted any nuclear explosions, even those for peaceful purposes. Our nuclear test sites have been silent for over a year. This long-awaited silence will last until January 1, 1987.

What a relief it would be for the nations around the world if silence reigned at all nuclear test ranges! What a relief it would be for our readers to find no references to nuclear testing in our magazine! If by January 1987 the world were to embrace the Soviet program seeking universal nuclear disarmament by the year 2000, there'd no longer be any use for the terminology of nuclear warfare.

As we celebrate SOVIET LIFE's thirtieth birthday, we sincerely wish all of our subscribers and readers happiness, health and clear skies overhead.



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Front Cover: At the Goodwill Games Soviet pole vaulter Sergei Bubka wowed spectators with a leap of 19 feet 8 3/4 inches, winning the

USSR MORATORIUM ON NUCLEAR TESTS EXTENDED AGAIN

Mikhail Gorbachev's Statement on Soviet TV

The Soviet Government has once again extended its unilateral moratorium on nuclear testing. Mikhail Gorbachev, General Secretary of the Central Committee of the Communist Party of the Soviet Union, made the announcement on Soviet television on August 18, 1986.

TODAY I would like to make a statement on one of the key problems of international politics.

The unilateral Soviet moratorium on nuclear testing, which the Soviet Union strictly observed for one year, expired several days ago, on August 6.

On what did our moratorium rest? What prompted us to make that decision, which was not simple, but extremely important and, I would say, difficult for us?

Briefly, it was based on the realities of the nuclear-space age. What are they? How do we regard them?

First. Mountains of nuclear and various other types of weaponry have been piled up, but the arms race, nonetheless, is not abating, but is gaining speed. The threat of its spreading into outer space has emerged.

It is important to stress that the pace of the development of military technology is so rapid that it leaves less and less time for peoples, countries and politicians to become aware of the real threat, and it limits humankind's opportunities to stop the slide toward the nuclear abyss. No delay is permissible. Otherwise, such sophisticated arms systems will emerge that agreement on controlling them will be altogether impossible.

The situation is becoming ever more intolerable. Today it is not enough to preserve the existing treaties. Major practical steps are required to curb militarism and reverse the course of developments for the better. The "balance of fear" is ceasing to be a factor of restraint.

This is not only because fear in general is no adviser to reason but also because it may bring about actions that would be unpredictable in their consequences.

This fear is a direct participant in the arms race: By enhancing mistrust and suspicion, it forms a vicious circle of heightened tension. There are many examples.

It is as clear as clear can be that the old notions of war as a means of attaining political objectives have become outdated. In the nuclear age, these obsolete tenets feed the policy that may result in an all-out conflagration.

Second. Our moratorium decision rested on the adherence of socialism as a social system to the cause of peace, and on the profound understanding of socialism's responsibility for the destiny of civilization. The Soviet Union, as a socialist state and a nuclear power, regards it as its supreme duty to do everything possible to save the peaceful future of the planet.

Our striving to transfer the course of international development to the tracks of détente accords with our philosophy, our socialist morality. In the nuclear age, saving the Earth from nuclear annihilation is a universal human task, the cause of all peoples.

Third. The present-day world is complicated, diverse and controversial. At the same time, it is becoming, objectively, ever more interdependent and integrated.

Prerenuclear thinking, in fact, lost its significance on August 6, 1945. Today it is impossible to ensure one's own security without taking into account the security of other countries and peoples.

Genuine security cannot exist unless it is equal for all and comprehensive. Thinking otherwise means living in a world of illusions, in a world of self-deception.

The new way of thinking required by the present-day world is incompatible with the notion of the world as someone's domain, or with attempts to "confer a benefit" on others by one's patronage, with instructions on how to conduct oneself and what path to choose—socialist, capitalist or other.

The Soviet Union believes that each people, each country, has the right to be master of its

own destiny, its resources, to determine its social development on its own, to uphold its own security and to participate in creating a comprehensive system of international security.

The aggravation of global problems is also characteristic of today's world. But those problems cannot be resolved without pooling the efforts of all countries and peoples. Exploration of outer space and the ocean depths, ecology and disease, poverty and backwardness are the realities of this age that demand international attention, international responsibility and international cooperation.

Many new world processes have thus been inextricably tied together. Disarmament could have an immense effect by releasing considerable funds and intellectual and technical potential for constructive purposes.

People, political and public forces of various orientations and world outlooks around the world are increasingly aware that the very existence of the human race is at stake, and the time for resolute and responsible actions has come. Our foreign policy draws inspiration from this fact. It calls for the utmost mobilization of reason and common sense.

Two tragedies involving nuclear-space age technology have occurred recently: the death of the Challenger crew and the accident at the Chernobyl Nuclear Power Plant. These accidents enhanced the threat, and they were a brutal reminder that people are just beginning to master the fantastically potent forces they have themselves created, that they are only learning to make these forces serve progress. These events were a lesson in what would happen if nuclear weapons were used.

Everyone—above all statesmen—should draw concrete and clear lessons from these events. The principal lesson is probably that weapons devised by man should never be used. Today it is simply suicidal to build relations among nations on the illusion of attaining superiority in terrible means of destruction. Fully eliminating these weapons is the only way to genuine peace. ▶

Embarking on this road means passing a historic maturity exam. This applies to all political leaders who have been entrusted with the lofty humane mission.

One must learn to face the facts with courage: Experts have estimated that the explosion of the smallest nuclear warhead is equal in radioactivity to three Chernobyls. Most likely, this is true. If that is so, the explosion of even a small part of the existing nuclear arsenal would be a catastrophe, an irreversible catastrophe. And if someone still dares to make a first nuclear strike, he will doom himself to agonizing death—not even from a retaliatory strike, but from the consequences of the explosion of his own warheads.

This is neither propaganda, nor political improvisation, nor the heightening of fear. This is a reality. It is irresponsible to reject it, and it is criminal to disregard it.

An objective and honest analysis of all these realities prompts other approaches to world politics. They underlie the principled conclusions we have drawn recently, especially at the Twenty-seventh Congress of the Communist Party of the Soviet Union.

Soviet foreign policy, including disarmament issues, is based on an understanding of the profound changes in the world. We believe that the Soviet proposals made on January 15, 1986, for eliminating nuclear weapons worldwide by the year 2000 fully meet the demands of the time. We have displayed a readiness to search for a compromise solution to the problems that are causing debate and suspicion.

The Soviet Union has placed a package of constructive proposals on the table at the Soviet-American talks on nuclear and space armaments. Jointly with our Warsaw Treaty allies, we have submitted a package of measures for reducing the armed forces and conventional armaments in Europe from the Atlantic to the Urals. In this sphere, too, we want advancement—mutual and consistent—toward lower and less dangerous levels of military confrontation.

New proposals have been made relating to chemical weapons which, in our view, make it possible to sign before the year's end, or next year, a convention banning chemical weapons and eliminating their stockpiles, as well as the industrial base for their production.

At the Stockholm Conference [on Confidence and Security-Building Measures and Disarmament in Europe], the socialist countries, constructively cooperating with the other participants, did a great deal to find solutions to such key issues as nonuse of force, notification about military exercises and troop movements, exchange of annual plans of military activity and the invitation of observers and inspections.

We have advanced a broad platform of measures to ensure security and cooperation in the Asian-Pacific region, and we invite all to participate in this process.

We have displayed initiative toward cooperating with all concerned countries in establishing international safeguards for the development of nuclear power engineering.

Recently we submitted to the United Nations, as an alternative to the Star Wars program, a program for building "Star Peace," for establishing a world space organization.

The Twenty-seventh CPSU Congress formulated the foundations of a comprehensive system of international security that is the most generalized expression of our new approach to foreign policy. A few days ago a group of socialist countries submitted a proposal for establishing such a system for consideration by the next session of the UN General Assembly.

At the same time, I want to stress that we understand that, no matter how important and significant our proposals might be and how committed we are to them, we will not be able to achieve them on our own. The problem of international security is a common problem and, therefore, a common concern and a common responsibility.

When working out our proposals, we study and take into account the points of view and initiatives of other governments and of public and political movements. We are very careful about envisaging security for all at each stage of the implementation of the proposals. And still, we by no means regard them as final, as not subject to discussion. The way out of the deadlock of confrontation is through dialogue and contacts, discussions and talks. This is the only way to thaw the ice of mutual mistrust and to achieve practical results.

This is what guides our attitude toward the problem of control during the solution of all the disarmament problems. For example, when we put forward our proposal on the discontinuation of any nuclear explosions, we said that we had no objections to international control. Our consent to the installation of American monitoring devices near Semipalatinsk is convincing proof of this. The problem of control seems no longer to be an obstacle on the way to reaching agreements. However, it continues to be used persistently with a view to concealing the true stance—the unwillingness to disarm.

People of good will welcomed our decision concerning the moratorium on nuclear explosions. We heard words of approval and support from all parts of the world. Politicians and parliamentarians, public figures and mass organizations regarded this step as an example of the correct approach to the present-day problems and as a hope of ridding themselves of the fear of a nuclear catastrophe. The Soviet moratorium received approval of the UN General Assembly, which is the world's most representative assembly of countries. We were supported by outstanding scientists—physicists and doctors, who understand the nuclear threat better than anyone else. I saw for myself at a recent meeting with scientists in Moscow that our moratorium had inspired scientific workers from various countries to vigorous action.

I repeat that our proposals stem from the realities of the world of today and are prompted by awareness of our lofty responsibility for the destiny of humanity, not by weakness.

On the other hand, we are faced with the refusal to stop nuclear testing, with a stubborn resistance to peace initiatives, with ostentatious disregard for the demands of the public and the opinion of many authoritative parties and organizations, and the concern of one's own allies and citizens.

This is the state of affairs that faces us, the Soviet leaders, at the time of our moratorium's expiration.

What is to be done? What choice is to be made? What decision will be the most correct, the best suited to the situation? What decision will promote the most positive processes, reducing the threat of military confrontation?

Our people resolutely support the foreign policy of the CPSU, of the Soviet state, and insistently demand that the foreign policy course of the Twenty-seventh CPSU Congress be continued. At the same time, a troubled note justifiably sounds in the letters and pronouncements of Soviet people: Is it expedient to preserve the moratorium when nuclear explosions reverberate across the Nevada desert one after another? Isn't the risk too great? Isn't the security of our country diminishing with time?

Indeed, the United States has been the champion in the number of explosions for 40 years. It has exploded another 18 nuclear devices during the year of the Soviet moratorium. I repeat: Eighteen, and three of them were not announced. As a rule, these tests were timed as a demonstration. The explosions were timed to coincide first with another Soviet extension of the moratorium, then with some other new Soviet initiatives. And we were even invited to Nevada to see how all this happens.

In brief, the Soviet Union has sufficient reasons for resuming its nuclear testing. And yet we are convinced even now that the ending of nu-

clear testing, not only by the Soviet Union but also by the United States, would be a real breakthrough in arresting the nuclear arms race, accelerating the elimination of nuclear arms. The logic of this is simple: If there are no tests, the nuclear weapons that both sides have stockpiled in abundance will not be upgraded.

The same is shown by the calls to the United States and the Soviet Union by a considerable and authoritative part of the world community. These groups include the "Delhi Six," the permanently operating forum of leaders of countries from the four continents—leaders of Argentina, Greece, India, Mexico, Tanzania and Sweden.

In Ixtapa [Mexico] the other day this forum adopted the Mexican Declaration, calling again for an end to all nuclear explosions. This is also the demand of the majority of the countries participating in the Nonaligned Movement.

We have received messages from politicians and public figures, from individuals and organizations of many countries. They, too, ask us not to resume nuclear testing, to give those who insist on nuclear explosions one more chance to see reason.

At the same time, we know with whom we are dealing. Therefore, the security of our country is sacred to us. This must be clear to all. This is a matter of principle.

We proceed from this, answering any challenge from the United States, including the notorious SDI. In this, too, it would be wrong to hope to intimidate us or prompt us to needless expenditures. If need be, we shall readily come up with the answer, and it will not be what the United States expects. But it will be the answer that will devalue the Star Wars program.

Thus the Politburo of the CPSU Central Committee and the Government of the Soviet Union have comprehensively and scrupulously weighed all the pros and cons. Guided by responsibility for the destiny of the world, we have decided to extend the unilateral moratorium on nuclear explosions until January 1, 1987.

In taking this step, we believe that people in all countries of the world, political circles and the international public will correctly evaluate the long silence on the Soviet nuclear test ranges.

On behalf of the Soviet people, I appeal to the wisdom and dignity of the Americans not to miss another historic chance to end the weapons race.

I am asking President Ronald Reagan that he once again evaluate without bias the situation that has taken shape, to discard everything extraneous and to overcome delusions about the Soviet Union and its foreign policy.

The Soviet Union is confident that agreements on ending nuclear tests can be reached speedily and signed this year at the Soviet-American summit meeting. That event would, undoubtedly, become the main outcome of the meeting, a considerable step on the way to ending the arms race. It would be a kind of prologue to further progress at the talks on nuclear weapons and their elimination, to a radical improvement of the whole situation in the world.

Because it is action, not just a proposal, the Soviet moratorium on nuclear explosions proves in deed the seriousness and sincerity of our nuclear disarmament program, of our calls for a new policy—a policy of realism, peace and cooperation.

More than half of 1986, which the United Nations proclaimed the International Year of Peace, has passed. By extending its unilateral moratorium, the Soviet Union is making another significant contribution to the common striving to ensure that this year should remain worthy of its name in history. This is the essence of the Soviet Union's new political initiative. This is the message that our country is sending to the governments and peoples of all countries, above all, to the Government of the United States of America and to the American people.

Slightly abridged.

Halting Nuclear Tests Is an Action Not a Declaration

The following is a summary of Mikhail Gorbachev's answers to questions from Zdenek Horeni, editor in chief of the Czechoslovak newspaper Rude Pravo.

THE General Secretary of the Central Committee of the Communist Party of the Soviet Union, Mikhail Gorbachev, said that he appreciates the broad international support the USSR has received for extending its unilateral moratorium on nuclear explosions until January 1, 1987. It is easier to list those who do not back our action than those who approve it, the Soviet leader noted.

Such broad response can be explained by the following motives and circumstances.

Never before have so many people acknowledged that nuclear war cannot be won and must not be fought.

The suspension of nuclear explosions by the Soviet Union is not a declaration, but an action. For the fourth time we have extended our moratorium. A year without explosions is a political and a military fact. The trend for reason and common sense is now set in world politics and can be expanded and strengthened by an agreement on a mutual ban on nuclear tests.

The Soviet leader described as unscrupulous the attempts to pit the issue of halting nuclear explosions against the issue of reducing nuclear weapons. Since the Geneva meeting we are not even as much as an inch closer to agreement on arms reduction—despite all Soviet efforts, Gorbachev pointed out.

The mutual cessation of nuclear testing could go a long way toward reaching agreement in that area. The fact is that a halt in tests would in effect mean a halt to the arms race in the most dangerous area—the development of new types of nuclear arms and their improvement. The only remaining problem would be a quantitative arms race, which could be simpler to solve.

The attitude toward ending nuclear tests has become the touchstone of the real purpose and main content of a nuclear country's foreign policy. No moratorium is necessary if you seek military superiority and want to carry on the arms race, especially in new spheres, such as space. If in solving international problems you count on strength and intend to resort to diktat and blackmail; if you are afraid of fair competition with a different social system in economy, democracy, culture and the spiritual fullness of human life; if you do not care what happens to nature, to the human environment; if the greedy appetites of war business tycoons and those associated with them are more important than the opinions and vital interests of hundreds of millions of people around the world, then you go ahead with nuclear tests, the Soviet leader stressed.

If there is a genuine desire to start reducing and then liquidating nuclear weapons altogether, as has been officially and solemnly stated on many occasions by the U.S. President himself and by some members of his Administration; if there is a real understanding of the fact that nuclear war is inadmissible; if it is true that the United States does not aspire to military superiority, then there are no fundamental obstacles to reaching an equal and strictly verifiable agreement.

Gorbachev flatly rejected the official American arguments in favor of continued nuclear tests, in particular, the excuse that tests are needed to check the U.S. nuclear arsenal.

Being sure of one's nuclear ammunition without conducting tests and by confining oneself to checking only the nonnuclear components of bombs and warheads has been the long-standing practice. Since 1974 the USA and the USSR, in conformity with the existing treaty, have not carried out tests in excess of 150 kilotons. Yet munitions with yields exceeding that "threshold" make up 70 per cent of the nuclear arsenal in the U.S. Our figure is no less. So we both have confidence in the reliability of our weapons without testing. Why then muddy the waters on a clear issue?

No, the main objective of the nuclear weapons tests is to develop fundamentally new types of armaments, armaments capable of hitting targets on the ground and in space. Under such circumstances it is hypocritical to say that the termination of tests would in no way promote a solution to the problem of nuclear disarmament.

Claims that it is impossible to verify a ban on nuclear tests have been described by the Soviet leader as a "bankrupt argument."

Science has proved that absolute and foolproof verification is possible, and the Soviet Union has come out for strict and scientifically substantiated verification, including on-site inspection.

In reply to the question about prospects for a new USSR-U.S. summit meeting, the Soviet leader said: "We are for holding a Soviet-American summit, a summit that would make marked progress in solving at least one or two vital problems of international security."

"Following the Geneva meeting, we took quite a few steps to bring our positions closer on a wide spectrum of problems that bear on overcoming the arms race. The 'all-or-nothing' approach is alien to us. It makes no sense to hold a meeting for 'nothing.' This might suit somebody, but certainly not us."

"The issues under discussion affect all countries, the whole international community, though, understandably, the measure of responsibility on the Soviet Union and the United States is particularly great. So, no matter how much we are provoked, we are not breaking the threads of contacts with the U.S. Administration, not calling into question their usefulness, not slamming shut the door to the West—although some people in the West, especially among those close to the U.S. President, would like that very much. But contacts are valuable not in and of themselves, but in the results they produce."

"We hope that the upcoming meeting between the USSR Minister of Foreign Affairs, Eduard Shevardnadze, and the U.S. Secretary of State, George Shultz, will help clarify the situation and prospects for a Soviet-American dialogue."

"If we proceed from the premise that a moratorium is unacceptable, if the issue of medium-range missiles in Europe is blocked, if strategic armaments are to be perfected, then what is there to agree on? A summit meeting would hardly be of any use if the frantic arms race goes on, if tensions are whipped up and if the existing accords are broken. But it would be quite easy to continue this dangerous policy and use such a summit to mislead people and to lull the public with the pretense that everything is all right. And actually, attempts are now being made to show that preparations for a summit are allegedly in full swing."

"Those who feign optimism and claim that everything is almost ready for a summit, possibly, might plan to shift the blame for the results of their destructive policy onto the USSR. The same purposes are, probably, served by another scenario that the USSR has allegedly come to the conclusion that it can't get anywhere with the Reagan Administration."

"But we attach too much importance to the time factor, and we are not going to stand still for two and a half years. It would be an unpardonable mistake to sit and wait. We will continue to use every opportunity for fruitful dialogue, for progress toward arms limitation and reduction, for settlement of regional conflicts and for development of international cooperation in all key areas. In this respect our conscience is clear before the Soviet and other peoples."


Mikhail Gorbachev also focused on all kinds of "leaks" and concoctions invented in the U.S. over confidential correspondence between the Soviet and American leaders. The inventors of these concoctions feign optimism and maintain that everything now depends on Moscow. The Soviet leader pointed out that the USSR will, certainly, give its answer to the U.S. President.

If all people could read these letters and compare the importance of each of them for removing the main obstacles to disarmament, they would see with what seriousness and responsibility the Soviet leadership approaches the problems of preventing war, and in what a concrete and businesslike way, with due regard for the other side's interests, it formulates its proposals. They would also see that the Soviet leadership is far from a position of hopelessness and believes in the power of common sense and humankind's desire for self-preservation.

By its actions and initiatives, the USSR is striving to strengthen peoples' hopes that the situation can be changed and that there is an acceptable alternative to confrontation, noted Mikhail Gorbachev. The Soviet leader added that humankind has already entered the second phase of the global antinuclear process, a phase marked not only by hopes but also by realistic plans and subsequent practical steps. He stressed that, as a Communist, he believes in the strength of the masses who are adopting a new thinking, which shows the way out of the crisis situation.



YESTER



Over the past 30 years several epoch-making events have occurred: the launching of the first artificial Earth satellite, the first manned space flight, the first space station, man's first steps on the Moon and the joint Soviet-American space flight on board the Soyuz and Apollo spaceships. True, the events are memorable, but they are events, and they could never have happened without people working and wanting to make them happen. One of the people inextricably linked with the dawning of the Space Age was Yuri Gagarin, planet Earth's No. 1 space voyager. The courage, the stamina, the vision he demonstrated in taking the first, and perhaps the most difficult, step into space set the standard for all of the others who followed.

FRIDAY

30 YEARS

By Yuri Zhukov

Yuri Zhukov (born 1908) is a political analyst for the newspaper Pravda, the chairman of the Soviet Peace Committee and a member of the Committee of the Parliamentary Group of the USSR Supreme Soviet. Here he reflects on the ups and downs in Soviet-American relations over the past 30 years.

I am positive that the launching of the first Soviet satellite on October 4, 1957, was somewhat of an incentive for rapprochement between the Soviet Union and the United States. Slowly, very slowly, the two nations began to realize the necessity of having more than nominal relations. At the very beginning, timid attempts were made to develop new forms of communication. It's a fact that in the late 1950s, relations between the U.S. and the USSR got "warmer." Slowly the countries began to establish economic contacts. After a long break, leading Soviet performers and artistic companies toured in the States. An agreement on exchanges of scientists and students was signed. Some time before the "thaw" set in, the magazine SOVIET LIFE appeared in the U.S., and its counterpart, AMERICA, in the USSR.

One by one, distinguished Americans visited Moscow to pursue possibilities for boosting mutually advantageous cooperation. Some were eager to promote collaboration; others to learn more about the Soviet system.

Senator Hubert H. Humphrey was received in the Kremlin, where he had a seven-hour talk with Soviet leaders. W. Averell Harriman, a former U.S. Ambassador to Moscow, also visited the USSR. Senator Jacob K. Javits

emphasized the necessity of improving Soviet-American relations. Eleanor Roosevelt, leading a delegation, traveled to the USSR to find out the possibilities for cooperation between Soviet and American universities and research centers.

The Soviet Union also persistently looked for moves that might benefit both nations. Delegations of Soviet VIPs visited the U.S. on many occasions. Their objective was to develop mutually advantageous economic, scientific and cultural contacts between the USSR and the USA. Anastas Mikoyan, then First Deputy Chairman of the USSR Council of Ministers, traveled to America in January 1959, and in the summer of that same year the two countries exchanged national exhibitions. Richard M. Nixon, then U.S. Vice President, attended the opening ceremony of the U.S. exhibit in Moscow and later met with Soviet leaders. Nixon also visited Leningrad, the Urals and Siberia.

As chairman of the State Committee for Cultural Relations with Foreign Countries, I received the Vice President in Moscow and accompanied him on his tour.

I remember a funny incident that took place in Novosibirsk. The American VIPs were invited to see a ballet at the local theater. The performance was flawless, and the young dancer, Maris Liepa, who has since gone on to become a Bolshoi Ballet star, was a smashing success. [Liepa started his ballet career in Siberia.] During intermission an excited member of the visiting delegation came over to me and said: "Listen, why on Earth have you done this? Why have you gone through all the trouble of bringing this huge ballet company all the way here from Moscow? Are you trying to make

the Vice President believe you've got top-class theaters everywhere? We're all amazed!"

Later the incredulous visitors were taken back stage to meet the dancers. As it turned out, all of them were permanent residents of Novosibirsk.

In September 1959 a Soviet VIP delegation led by Nikita Khrushchev visited the U.S. at President Dwight D. Eisenhower's invitation. I, too, was a member of the delegation. The Americans gave us a warm welcome, but the talks that were held at Camp David yielded no cardinal results.

Yet we still hoped that the "thaw" would develop into something more tangible. According to an agreement reached at Camp David, the Soviet, American, British and French leaders were to meet in Paris in May 1960. I was sure that it would mean the end of the cold war, which had become a nuisance for everyone.

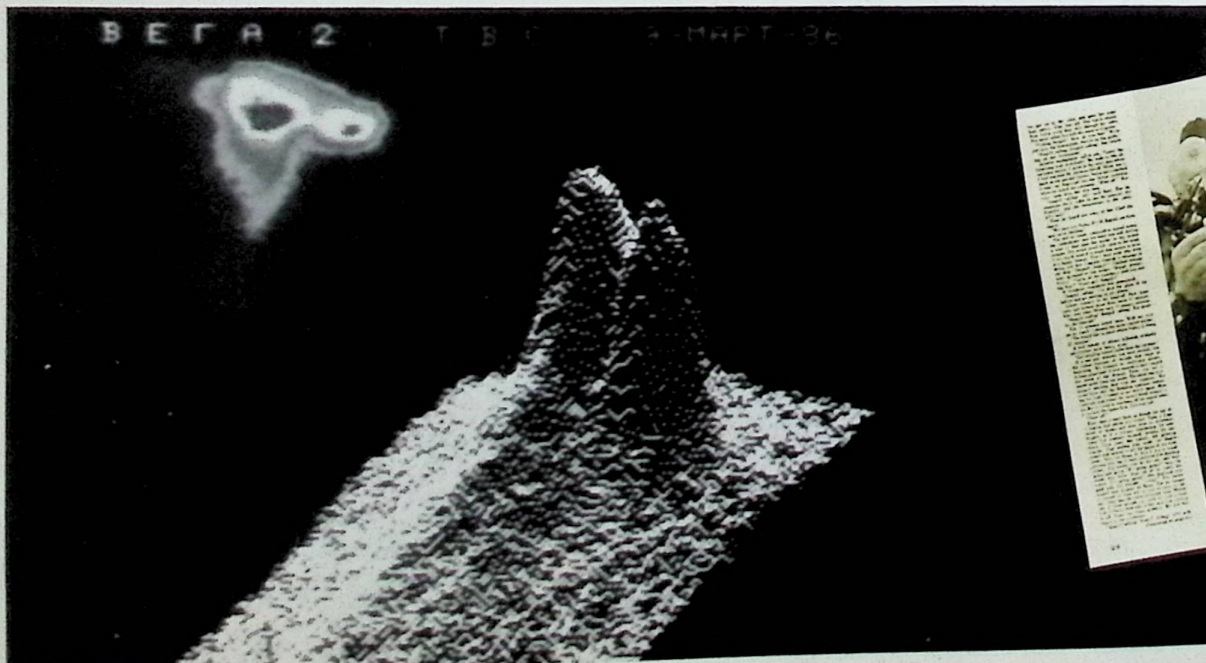
Another Cold Wave

But, the Paris summit never took place, and it became clear that another "cold wave" was in sight.

It was still a long way from the 1970s, or the period of détente, when in 1968 I again visited the States. Richard Nixon, the new American President, had just moved into the White House. In anticipation of the political changes that were coming, I traveled around the country by plane, by car and on foot, making my way through the dense, preoccupied crowds between tall rows of skyscrapers made of steel, plastic, bronze and marble.

While I was in California, reporters from *The Los Angeles Times* advised me to interview their state Governor—Ronald Reagan. Here ▶

For 30 years SOVIET LIFE has been keeping its finger on the pulse of what's happening—on the sea, in the air, on the ground and in space—keeping readers informed of the latest developments.



Above: Valentina Tereshkova and Valeri Bykovsky meet after their flights on Vostok 5 and Vostok 6, August 1963. First picture of Halley's Comet sent by Vega 2 and a mathematical model of the comet (left), August 1986



is a diary entry from that time.

Dressed in an elegant, light-colored suit, a tall, athletic-looking man with a dashing smile sat at a huge desk in front of me, leaning comfortably against the back of his chair. The Governor was very cordial to Pravda's correspondent. He was obviously pleased to tell me, a Communist, about his state, which is usually referred to as "a glimpse of the twenty-first century."

Incidentally, in May 1974 I again met with Ronald Reagan. Still California's Governor, he was then receiving a Soviet delegation led by Boris Ponomarev.

Change Essential

The public's demand for an improvement in relations between the two major powers grew more insistent. Thus, Mike Mansfield, the Democratic Majority Floor Leader of the U.S. Senate, told me on one occasion that it was impossible to delay the development of Soviet-American relations any longer, and no matter what, the two countries could cooperate in many spheres. Of course, there were difficulties, he noted, but they could be overcome by joint effort. Republican Majority Floor Leader Hugh Scott told me something very similar.

J. William Fulbright, chairman of the Senate Foreign Relations Committee, as well as Republican Senators George D. Aiken, Jacob K. Javits, and many others were of the same mind. They favored holding talks and promoting economic contacts.

The Soviet Union was ready for constructive cooperation with the United States and other Western countries. Yet Soviet-American relations remained strained, and business contacts remained extremely limited.

In 1970 President Nixon noted in his State of the Union Address that if peace was to be secured in the last third of the twentieth century, the establishment of new relations between the United States and the Soviet Union would be the main factor in this process. Without underestimating the existing differences, the American President stressed that the two countries were determined to proceed from an era of opposition to an era of negotiation. He noted that the Soviet-American talks on limiting the arms race and other issues would have more chance of success if the two sides were guided by mutual interests rather than by naive sentiments.

Once at a meeting with a group of U.S. Senators, one of them abruptly asked me to explain what I disliked most in our relations. I answered: "A strange cycle has been repeatedly occurring. As soon as the political atmosphere in our relations begins to improve, we suddenly encounter another crisis."

The Senator listened attentively to what I was saying, nodded his head and remarked: "That's exactly what I think."

Vyacheslav Zaitsev now rates among the world's top 10 fashion designers. We were there when he was just beginning. Drawings of his early creations appeared in September 1966. Above are some of his latest designs. Next year we'll give an update.

Designed by Zaitsev



The Rassvet Collective Farm, Byelorussia, was featured on our pages in January 1963 (below) and April 1986 (right). The changes in the farm's look reflect the changing face of our countryside.



The leaders of the USSR and the USA, Mikhail Gorbachev and Ronald Reagan, at the summit meeting in Geneva, November 1985. The rest of the world looked forward to new, constructive steps in the relations between the two countries.



Years of Détente

Yet the tendency toward détente was there.

In May 1971 the USSR and the USA agreed to draft an antiballistic missile agreement and started talks on strategic arms limitation. On September 3, 1971, the USSR, the USA, Great Britain and France achieved an agreement on West Berlin—a major step toward détente.

That was the beginning of the longest period of détente in the history of our two countries' relations. The spirit continued throughout the 1970s, although there were political problems then, too.

Actually, the period of détente began with the Soviet-American summit in May 1972, when President Nixon arrived in Moscow on

an official visit. The summit talks resulted in 10 joint documents, which paved the way not only for improvement in Soviet-American relations but also for global détente.

The summit's main document was the Basic Principles of Relations Between the Union of Soviet Socialist Republics and the United States of America. This marked the first time in history that an American President signed a document according to which the USA acknowledged the principle of equality and equal security in relations between the USSR and the United States. The two countries stated that the ultimate goal of their effort was to resolve the problem of universal and complete disarmament and to ensure an efficient system for international security.

On May 26, 1972, the two countries signed the Treaty on the Limitation of Anti-Ballistic Missile Systems and the Interim Agreement on Certain Measures with Respect to the Limitation of Strategic Offensive Arms, envisaged for five years. Other important documents were signed during the same talks.

Placing a special emphasis on international issues, the leaders of the Soviet Union and the United States concluded that it was essential to convene an all-European summit with the participation of the U.S. and Canada.

All of the agreements signed in 1972 served as the solid foundation for a constructive change in USSR-USA relations.

From June 18 to 25, 1973, another Soviet-American summit took place, this time in the United

States, when Leonid Brezhnev traveled to the States at the invitation of President Nixon. I covered that visit as well. Here are some of the entries I made in my diary.

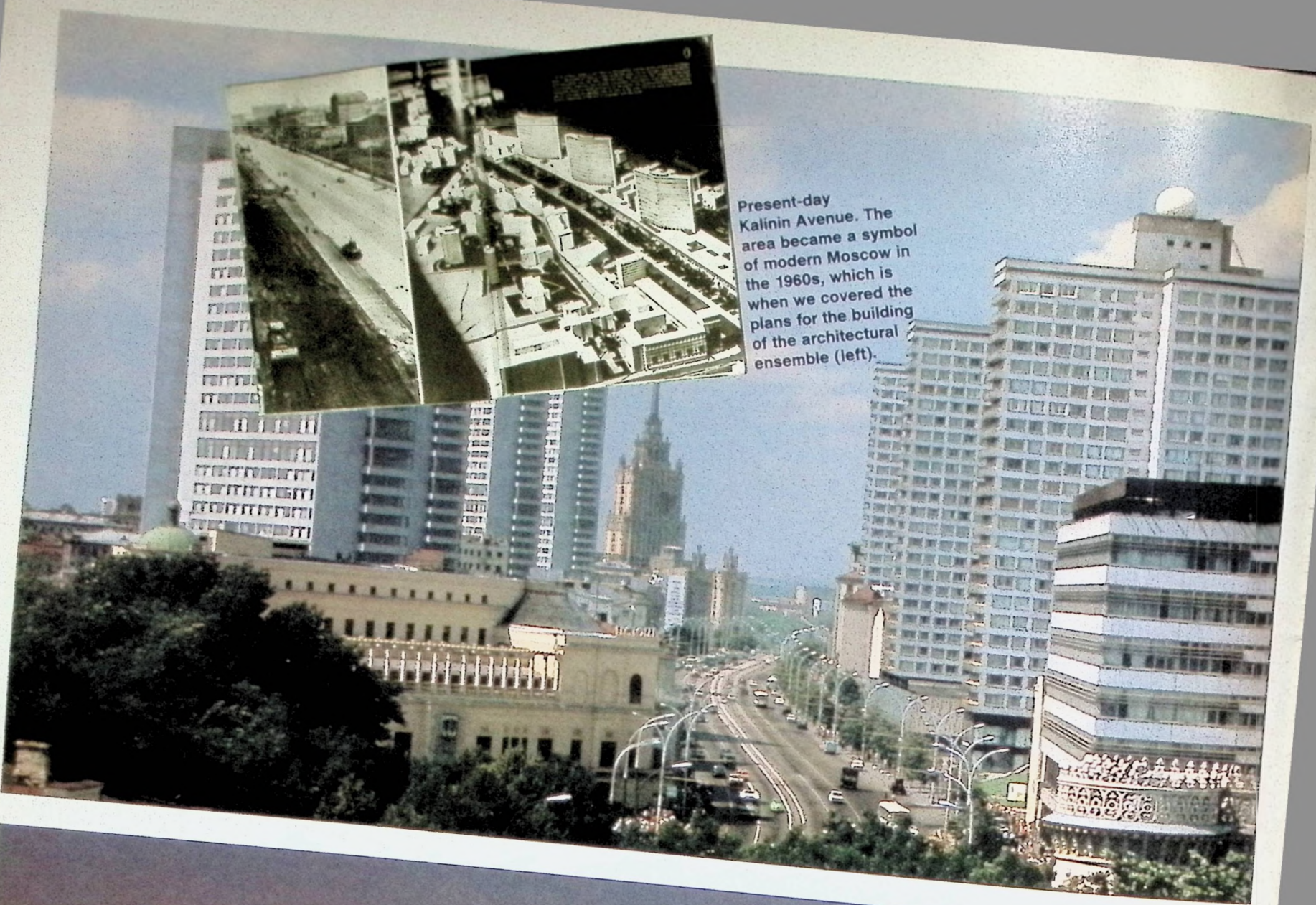
June 15, 1973. Thirteen months have passed since the signing of the documents in Moscow that have paved the way for the normalization of Soviet-American relations. Much has been achieved over this time. Though the trade agreement has not yet been ratified, our economic cooperation is developing faster than expected.

One of the first U.S. businessmen to cooperate with the USSR was Armand Hammer, who established business contacts with Soviet Russia as early as the beginning of the 1920s. For the past 50 years Hammer has achieved a great deal in this regard. He has ▶



The year 1975 was the year of the joint Soyuz-Apollo project and the year when a Soviet cosmonaut and an American astronaut shook hands in space. This project vividly showed the world the fruitful benefits of cooperation in space exploration. Right: The Soviet-American crew as featured in August 1975.





Present-day Kalinin Avenue. The area became a symbol of modern Moscow in the 1960s, which is when we covered the plans for the building of the architectural ensemble (left).



In December 1976 we ran a story about the training bark, the *Krusenstern*, and its skipper. The sailing ship had won the Cutty Sark Challenge Trophy in 1974. Receiving an appointment to the *Krusenstern* is the dream of navigational school cadets.

Fair winds, KRUSENSTERN!

The three-masted bark "Krusenstern" is named as a training ship for cadets from navigational schools in Kaliningrad and Murmansk. In 1974 it won the Cutty Sark Challenge Trophy.

...the ship was built in 1974...
 ...the ship was built in 1974...
 ...the ship was built in 1974...

Far right: The festive salute in Moscow marking the fortieth anniversary of V Day, May 9, 1985. On that day the entire nation observed a minute of silence in memory of the Soviet, American and British soldiers and the patriots from different countries who gave up their lives to defeat nazism. Right: A stamp commemorating the Allied victory. Below: The 27th CPSU Congress, held in the Palace of Congresses in Moscow, February 24 to March 6, 1986. It took place at a crucial turning point for the country and the world.



Peace and friendship among the people of the USSR and the USA, among people all over the world, is the aim of SOVIET LIFE magazine. The better the understanding, the greater the chance for a prosperous world with peaceful skies overhead.



The Baikal-Amur Mainline (BAM) railroad. Right: A story on BAM was run in 1975. Above: The line is finished, 1985. Plans are now in the works for a trunk line connecting BAM with Yakutia and the central eastern part of Siberia.



BAM: A BASE FOR EXPLORING NEW RICHES

ROAD TO SIBERIA'S FUTURE

put forward an amazing idea for building a gas pipeline and gas-liquefying plant in the USSR and then transporting the products to the U.S. on special tankers.

Yesterday, in New York, I met with the head of a Soviet purchasing committee. He told me that American companies are quite interested in selling U.S. equipment for the immense heavy truck manufacturing plant that is now under construction on the Kama River.

Anticipating further economic contacts, Chase Manhattan Bank has opened a branch in Moscow. Today we met with the president of the bank, David Rockefeller—an old acquaintance. He told us that in recent years some profound and inspiring changes have taken place in Soviet-American relations, which have certainly laid the foundations for our cooperation. Many companies are taking an active part in these changes. He went on to say that Chase Manhattan had already invested 86 million dollars in loans for American-made equipment to be exported to the Soviet Union, and that was only the beginning.

June 22, 1973. Along with other journalists, I was present at the signing of the joint Soviet-American documents at the White House. There were quite a few officials present too.

"Some events are remembered for a long time," commented an American journalist standing next to me. "I think this day in June will also be remembered. Now there is hope that my grandchildren will not see the horrors of nuclear war. . . ."

When the signing ceremony was over, I asked President Nixon for his thoughts on the document he had just signed. He told me that his meeting with congressmen today had indicated that the agreement on the prevention of nuclear war,

which, incidentally, has no time limits and which goes into effect immediately after being signed, had wide support. He went on to say that a really important event had taken place, adding that its significance could not be overestimated.

What is the gist of the newly signed agreement? First, the USSR and the USA have made a commitment to prevent any situations that might dangerously exacerbate their relations. They must act in such a way as to avoid military confrontation and to rule out the possibility of a nuclear war between them or other countries.

Second, the two leaders have agreed that each side will refrain from threatening to use force or actually using force against each other or against other countries if the circumstances might endanger international peace and security. The two great powers will be guided by those considerations while planning their foreign policy and in their international activities.

Third, they have made a commitment to begin urgent consultations with each other if relations between them or between one of them and other nations appear to be fraught with the risk of a nuclear conflict, with a view to preventing war. As an American diplomat told me, we could now feel confident that the Soviet Union and the United States have produced a document that might serve as a model of peaceful relations for all countries.

Détente lasted for some time, and consultations and working visits between leading dignitaries of the two countries, including high-level contacts, continued. Indeed, never before in the entire history of Soviet-American relations had there been such a long period of constructive cooperation. Since

November 1933, when the USSR and the USA established diplomatic relations, the two countries have concluded about 100 treaties and agreements. About 40 of them were signed in the period from 1972 to 1975.

That was how the solid ground was laid for developing economic, political and scientific cooperation between our two countries.

The Helsinki Spirit

August 1, 1975, was the third and final day of the Helsinki conference. The debates that took place during the morning and afternoon sessions showed the world once again that Europe and America are a conglomeration of complex and often contradictory elements. At the same time it was clear that there had to be a common denominator of vital interests, desires and aspirations for all the participating nations. The word "peace," the most expressive word in all languages, became that common denominator. I wrote the following in my diary:

Last night and this morning, many heads of state, including U.S. President Gerald Ford, expressed the idea that all nations must be provided the right to peace. President Ford noted that the United States was glad to sign the jointly drafted document because it accepted every principle of international cooperation contained in the document. Not one conference participant expressed disagreement with the principles outlined in the Final Act.

All 10 principles of interstate relations developed at the Helsinki conference were included in the Constitution of the USSR adopted in 1977. Strictly adhering to the agreement reached in Helsinki, the

Soviet Union continued to make tremendous efforts to reduce the scale of military confrontation and to curb the arms race. The USSR made the commitment not to be the first to use nuclear weapons, and together with other countries of the socialist community, it put forward a proposal to sign a treaty renouncing the use of force and maintaining relations of peace between the Warsaw Treaty countries and the NATO countries. Based on the principles of the Final Act, the Soviet Union developed its long-term trade, economic, scientific and technical cooperation with the West.

In 1979 the situation allowed for the signing of a new treaty on the limitation of strategic offensive arms, known as SALT II. That was the last Soviet-American political document to be adopted during the era of détente. In June 1979, in Vienna, Leonid Brezhnev and Jimmy Carter affixed their signatures to SALT II.

I was in the Austrian capital to cover the summit. This is an entry from my diary:

Both sides, in particular their defense ministers and heads of state, have confirmed that the coordinated text of the new treaty fully agrees with the principles of equality and equal security. The text was thoroughly verified by top Soviet and American experts.

Of course, the treaty doesn't mean an end to the arms race—the USSR was in favor of more radical measures—yet it certainly imposes significant limitations on the delivery systems of the most dangerous nuclear armaments. If all clauses of the treaty are observed, the security of the two countries will be enhanced significantly. Even more essential, the signing of the treaty must be immediately followed by

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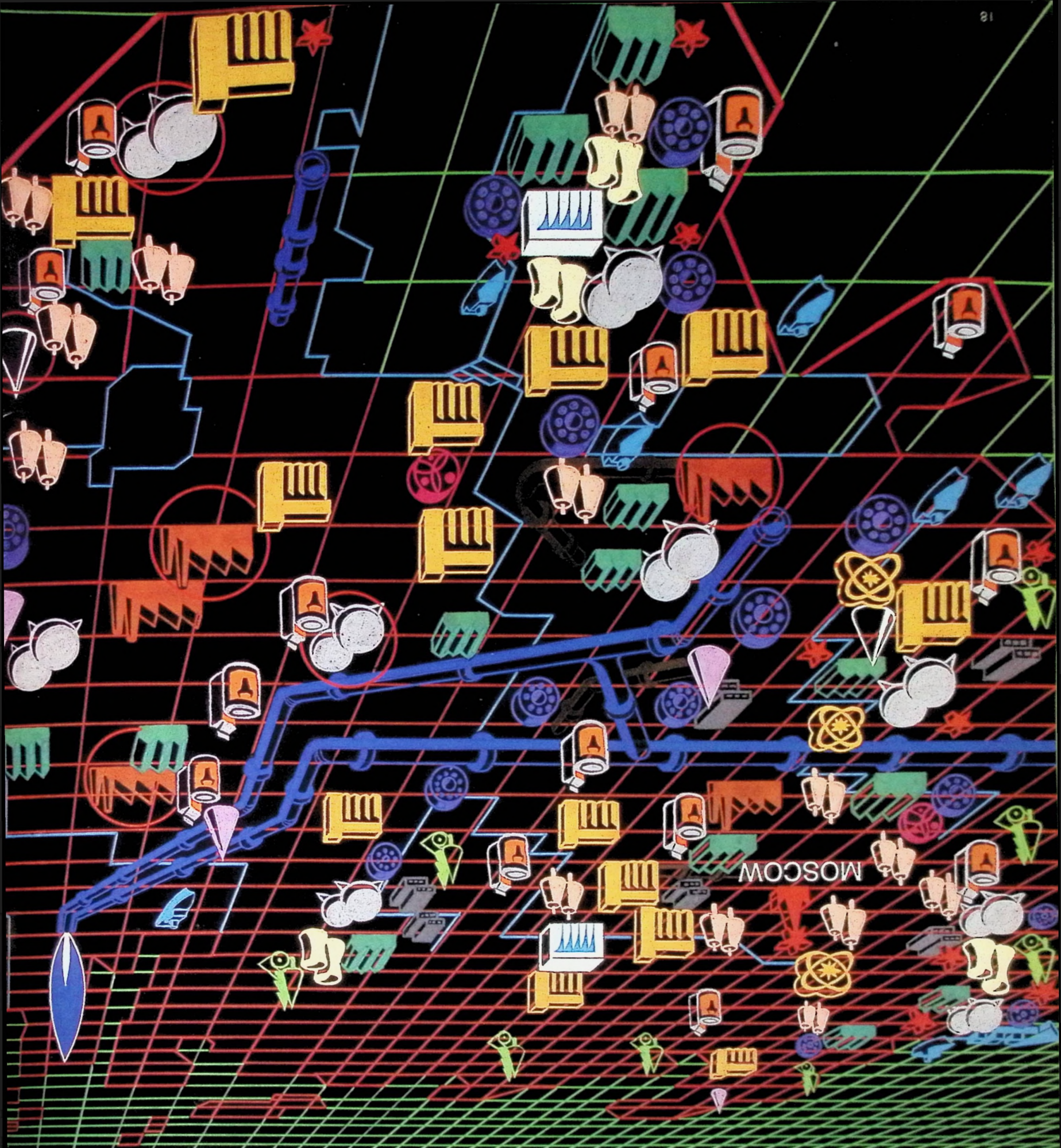
"Accelerating the country's socioeconomic development is the key to solving all our problems— immediate and long-term, economic and social, political and ideological, internal and external. It is the only way our society can and must achieve a qualitatively new stage," said Mikhail Gorbachev at the Twenty-seventh CPSU Congress, held earlier this year. That is the focus of the USSR today, and it will involve the participation of all Soviet citizens in all spheres of life.



TODAY

Mikhail Gorbachev, General Secretary of the CPSU Central Committee, on a visit to Krylatskoye, a residential neighborhood in Moscow. Besides talking with local residents, he toured several shops, the district hospital and a number of day-care centers.





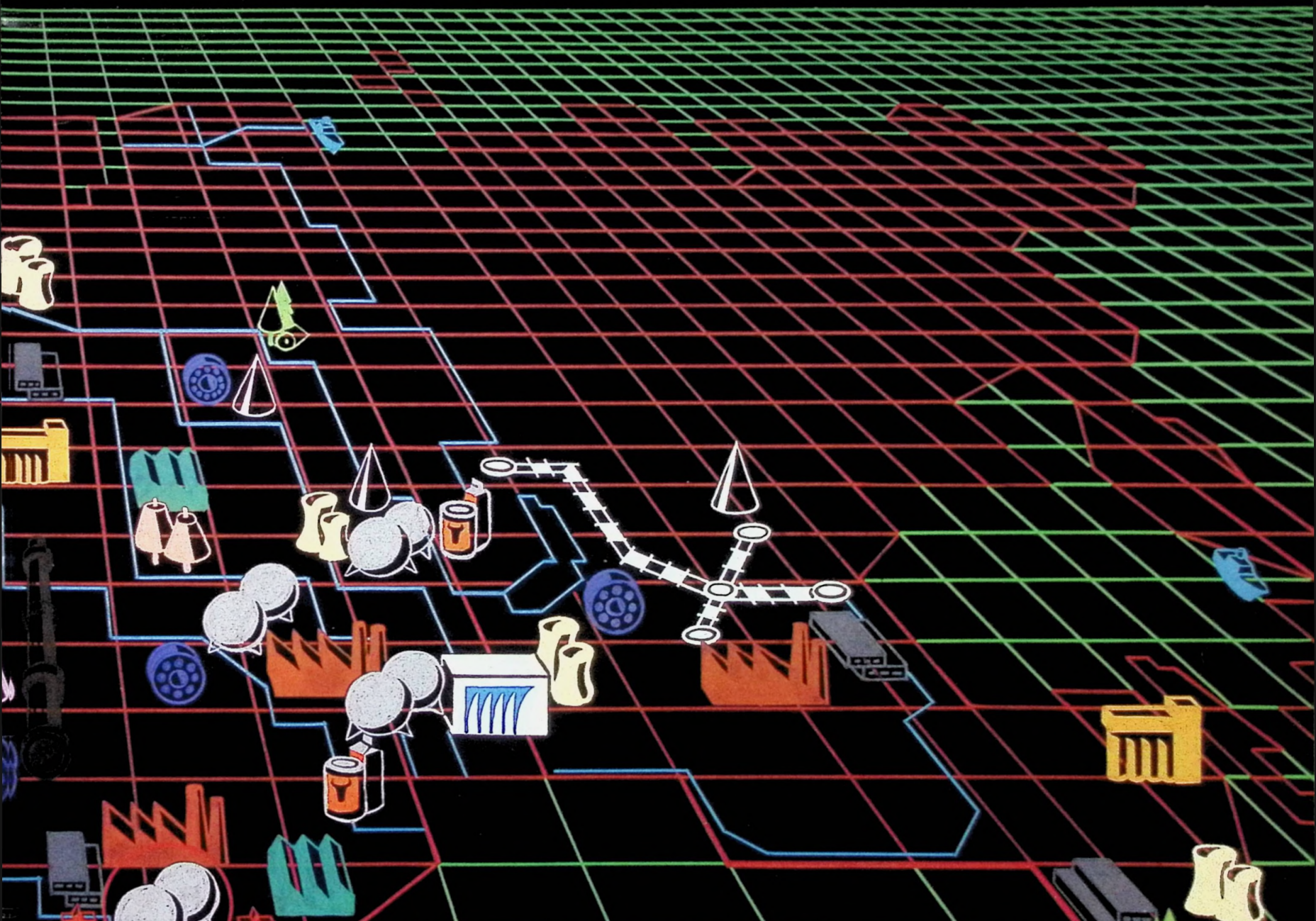
MOSCOW




















Projects to Be Put in



INDUCTION SITES

Operation in 1987



	nuclear power plants		building materials and construction industries
	hydroelectric power plants		light industry
	thermal power plants		food, meat and dairy industries
	ferrous metallurgy		microbiology
	coal industry		procurement enterprises
	iron-ore production		agricultural projects
	chemical, petrochemical, oil-refining and gas industries		sea and river ports
	mechanical engineering		gas pipelines
	timber, pulp-and-paper and woodworking industries		oil pipelines
	plants and factories		



THE RIGHT TO LIVE

By Academician Yevgeni Chazov

Yevgeni Chazov, director of the Institute of Cardiology of the USSR Academy of Sciences, is a founding member and cochairman of International Physicians for the Prevention of Nuclear War.

Humankind is preparing to enter the twenty-first century. People are expecting much from it, and everyone sees the new century differently. But all people dream about a time when human reason and scientific and technological advances will ensure peace, prosperity and health.

Thinking about the future, we often forget that humankind's prosperity and its very existence are threatened by more than 50,000 nuclear warheads, which are constantly targeted at all people on Earth; we forget that every day adds 10 brand-new nuclear warheads to those already stockpiled.

The current situation is unprecedented. In previous epochs even the largest and most protracted wars never threatened the existence of humankind and the existence of all life on Earth. With the advent of nuclear weaponry, this has become a possibility.

Numerous scientific surveys have shown that the use of even a small part of the stockpiled nuclear weapons will cause the instantaneous death of hundreds of millions of people and enormous destruction of the productive forces. Survivors of a nuclear blast will be doomed to slow death, and the living will envy the dead.

It is difficult to understand the reality of a "million Hiroshimas," which is the potential power of the nuclear weapons presently stockpiled. The number of people who would suffer in a nuclear war is staggering—two billion! But the actual sight of even several people doomed to death from radioactive contamination and an understanding that medicine is powerless to help make one realize the nightmare that would result from a nuclear war.

The Physicians Movement

Six years ago we physicians—loyal to the Hippocratic oath, by which we had promised to save the health and life of our patients—united to tell the truth about nuclear weapons and the consequences of nuclear war. Participants in the movement, International Physicians for the Prevention of Nuclear War, do not see eye to eye on all issues. But we are united in our understanding of the main issue in today's world—

the necessity to do away with nuclear arms.

We were alarmed at the indifference of many people to irresponsible statements justifying the nuclear arms race. It was necessary to awaken these indifferent people, to show that this race threatens every person on Earth. This is how we understood our professional duty: A physician should tell the patient what threatens his health and life.

What has been achieved by the physicians movement? We have helped millions of people to dispel the fog of ignorance. The scientific groundlessness and the dangers inherent in the concepts of "limited" and "protracted" nuclear wars have become even clearer. The same can be said of the idea that nuclear wars are winnable.

We have succeeded in convincing people that medicine will be unable to offer even minimum aid to millions of victims. In fact, our experience in providing medical treatment to patients suffering from burns, injuries and radiation sickness shows that 30 million physicians and 100 million nurses and other paramedical personnel would be required to give such aid to all who would suffer during a nuclear war. This is impossible. Today our planet has a total of only 3.5 million physicians and 7.5 million paramedical personnel. Besides, in a nuclear war many of those people would themselves be victims.

We have succeeded in bringing home to people our conviction that no ideological, political or national differences can justify the disease, suffering, death and ecological upheaval that would result from a nuclear war.

A Prescription

The six congresses of International Physicians for the Prevention of Nuclear War have suggested on the basis of precise scientific data a recipe for the survival of humankind—a ban on nuclear weapons tests; a pledge not to be the first to use nuclear arms; the prevention of the spread of nuclear weaponry to outer space; and the limitation of nuclear weapons, followed by their complete elimination.

Physicians have not the slightest doubt that complete and universal elimination of nuclear weapons is an achievable goal. The

Soviet Union has advanced a program to rid the world of these weapons by the year 2000. The existence of nuclear weapons is not a sine qua non of the development of human civilization. Yet since they were developed, they have led civilization to a fragile threshold beyond which it may face ultimate self-destruction. This truth ought to be admitted by all responsible leaders.

It is crystal-clear that a nuclear era requires new thinking and awareness of the fact that in our contemporary, interdependent world, security can only be achieved by reducing arms, curtailing confrontation, promoting trust and cooperation, resolving regional conflicts and realizing that the supreme task of statesmanship is to ensure humankind's right to live.

More than three decades ago, Albert Einstein said, and rightly so, that humankind would require new patterns of thinking if it wanted to survive. New thinking does not imply a quest for security by stockpiling new weapons systems and by imposing a particular order on other nations. New thinking means admitting that states are interdependent, particularly in matters of security.

New Way of Thinking

The unilateral Soviet moratorium on nuclear testing, extended once again until January 1, 1987, is an expression of and a catalyst for the new way of thinking. This action made many people on our planet change their attitudes.

The new way of thinking means destroying old stereotypes. Addressing a conference of Physicians for Social Responsibility in Philadelphia last March, Professor Bernard Lown, a cofounder of International Physicians for the Prevention of Nuclear War, noted that anti-Soviet sentiments were a crucial, if not the most crucial, obstacle to supporting the movement for nuclear disarmament in the United States. No success could be achieved unless an unbiased assessment of the Soviet Union was made the chief point on the antinuclear movement's agenda.

Speaking of destruction of stereotypes, I cannot help quoting Dr. Paul White. Perhaps this is a personal reaction—he was the first American I met who changed my impression of American physicians. I met him 30 years ago, in 1956, when he led a group of American physicians that came to the Soviet Union. This was the first such group to visit the Soviet Union in many years.

Paul White was an unbiased man. Later, in his book *My Life and Medicine*, he wrote that he dreamed of establishing fraternal relations between people on our planet boiling with passions. Paul White's life and career offer a vivid example of new thinking.

Not only physicians and scientists but other people free from political shortsightedness understand that it is no longer possible to adhere to the old prejudices.

Way Back from the Brink

I receive many letters from citizens of the Soviet Union and of the United States. Their main idea is that the people of our countries should maintain friendly relations for the sake of preserving peace, for the sake of the future of our children. The author of one of these letters noted that the misunderstandings between Russians and Americans should be dispelled.

The physicians movement now regards cessation of nuclear tests as the main goal of its activities. Testing is the most important and at the same time the weakest link in the vicious circle of the nuclear arms race. An end to testing would break the cycle of perfecting nuclear weapons and creating new, even more destabilizing systems. It would erect obstacles to putting nuclear weapons into space.

A congress of the physicians movement in Cologne urged the United States to follow the Soviet example by stopping nuclear tests. A mutual and controlled moratorium on all nuclear explosions would make it possible to move back from the brink of disaster.

The new way of thinking implies resolute actions for converting vast means from military to peaceful purposes. More than 11 million children today die before the age of one. More than five million of them die of diphtheria, whooping cough, tetanus, polio and tuberculosis. Vaccination against these diseases for all newborns worldwide would cost 260 million dollars—much less than the cost of one nuclear submarine, which runs to more than one billion dollars.

Physicians protest such inhumane squandering of money. Instead of a space system of strategic defense, they suggest a system of space medical communication that would help preserve life on Earth. The USSR and the United States, WHO and UNICEF, the countries of the West and the East, and medical centers and universities all over the world could set up a system of satellites that any doctor in any country could consult to save human lives. Weakening political and military tensions would make it possible to solve jointly many key medical problems.

We do everything we can to save a seriously ill person. Humankind today is suffering from a terrible ailment—fear of nuclear war. So we must awaken people's consciousness, help them cast aside mutual mistrust, selfishness and chauvinism, and convince them of the need to approach international affairs in a new way. This new way would build a nuclear-free world, setting up a comprehensive system of reliable security through disarmament. Then prospects would open up for fruitful cooperation among all nations.

Physicians have always believed in human reason. We believe that common sense will prevail. ■

WE REMEMBER YOU, SAMANTHA!

By Dmitri Polyakov

How many children from different countries have come to Artek? Does the place still remember the little girl who came here from the United States? . . .



American schoolchildren aboard the *Samantha Smith* on the Black Sea. The ship is named in honor of the late Samantha Smith who visited the USSR at the invitation of Yuri Andropov. The schoolchildren accompanied Jane Smith, Samantha's mother, to the Crimea earlier this year.



The woman was leaning against the windowsill and peering out at the sea. Her face seemed to express nothing but fatigue. She wanted to linger here a minute longer, in solitude, with the Black Sea and the empty beach before her.

There was a gentle knock on the door. "Are you ready, Mrs. Smith? The Young Pioneers are waiting for you on Samantha Lane."

"I'm coming," the woman replied.

A lane lined with palm trees has been named in honor of Samantha Smith at the Artek Young Pioneer Camp in the Crimea, on the Black Sea coast. And soon a monument to the young American schoolgirl who wanted to make friends with the Soviet people will be erected there, too.

Looking back to three years ago, I remembered how Moscow had welcomed the 11-year-old who had come to the USSR at the invitation of the Soviet leader. She wanted to see for herself if bears roamed the streets of Moscow and if the Russians really intended to conquer the whole world.

The airport was a hubbub of clicking cameras, friendly smiles, colorful flowers, welcoming hand-

Continued on page 59

Children from many countries took part in the farewell concert given for the schoolchildren visiting Artek.

Jane Smith plants a sapling of an American pine in Druzhba (Friendship) Park in the youth camp.



The all-out intensification of production based on the speeding up of scientific and technological progress and the restructuring of the economy—these are the levers for the technological reconstruction of our entire national economy.



ECONOMY

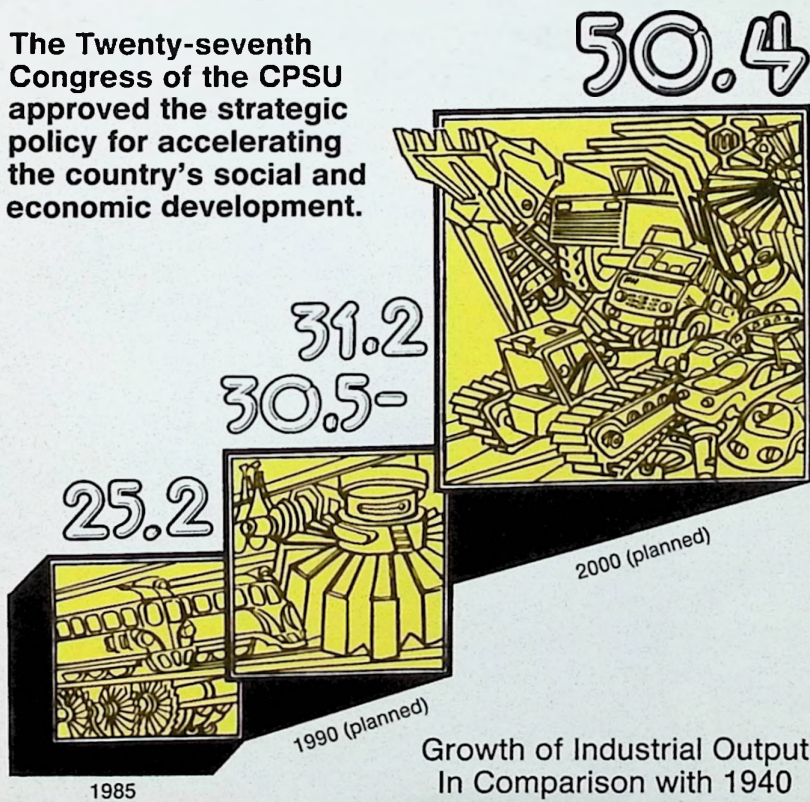
TOTAL RECONSTRUCTION

By Pavel Bunich

BEGINNING AROUND the mid-1970s, progress somewhat slowed down in our society. It wasn't a move backward—the absolute figures grew but the relative figures declined, and the increments in the national income, in output and in labor productivity, were below previous levels. The past five years—1981 to 1985—have seen no basic change in the complicated situation.

One contributing factor was certainly a demographic echo of World War II, which resulted in a perceptible reduction in the pool of labor resources. Another was the growing costs of raw materials and energy since both are produced in difficult-to-access areas of Siberia, the Far East and the Far North. But no matter what caused the situation, it could not continue. The Communist Party of the Soviet Union put forward a program for making fast headway by accelerating scientific and technological progress in the country. Since then the term "acceleration" has become firmly established in our vocabulary, and it is now a catchword for the present situation.

The Twenty-seventh Congress of the CPSU approved the strategic policy for accelerating the country's social and economic development.



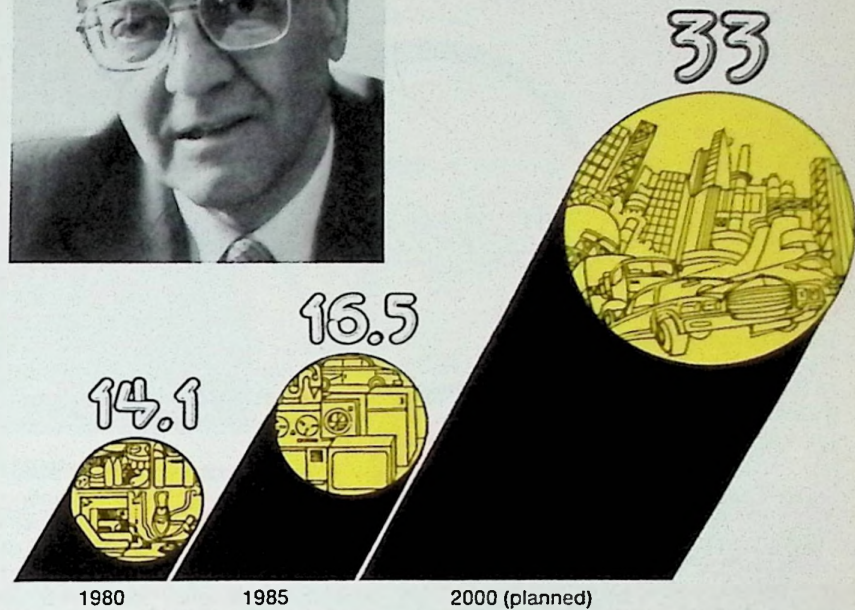
The basic target of the accelerated development of our society is as follows: the all-out intensification of production based on the speeding up of scientific and technological progress and the restructuring of the economy. These are the levers for the technological reconstruction of our entire national economy.

The first priority is the broad introduction of the most advanced technology, progressive manufacturing processes and flexible production units. This all-embracing trend has several stages. The present stage is characterized by the completion of the comprehensive mechanization of all sectors of our economy. Parallel with this, another process, the increased use of computers and industrial robots, is under way.

The next stage involves the transition to fundamentally new technological systems, including rotor and rotor-assembly lines in large-scale industrial production, intensive technologies in crop and livestock farming and flexible automated production units in machine building. The current five-year plan period—1986 to 1990—provides for obtaining at least two-thirds of the increase in labor productivity by introducing scientific and technological advances into the workplace.



Pavel Bunich, corresponding member of the Academy of Sciences of the USSR, is a prominent Soviet economist.



Growth of the National Income In Comparison with 1940

The goal of scientific and technological progress is to radically improve the use of natural resources, raw and other materials, fuel and energy at all the stages. The only possible way of achieving the target lies in conserving resources by introducing resource-saving technologies on a broad scale.

Industrial and agricultural products of the highest quality will underlie further progress. An orientation to developing equipment and production processes that surpass the best world standards is intrinsically linked with this.

The achievements of the scientific and technological revolution can ensure rapid growth in labor productivity only if technological upgrading becomes a vital necessity for each industrial plant. But technology alone cannot bring accelerated progress. It is only by the personnel at the plants and factories themselves becoming truly interested in implementing new technologies that the set objective can be reached. The economic and moral incentives that determine a worker's attitude toward his or her job will play the decisive role.

Without sufficient interest on the part of the workers, however, it will be difficult to employ even such quick-yielding reserves as better use of production capacities and more rational utilization of raw and other materials and energy. This is doubly true for strategic changes. And it is precisely this kind of radical transformation that is needed now in our economic mechanism.

Changes were begun in 1984 with a large-scale economic experiment in some industries. Since the beginning of 1986, one-third of the plants and factories accounting for more than half of the USSR's industrial output as well as all communications enterprises, service establishments and a part of transport have been working on the basis of the new methods. In 1987 these methods will be implemented in all industrial sectors, and by the year 1990, in the entire national economy.

Today managers must demonstrate economic initiative in fulfilling contract obligations, in making profits and in conserving raw materials, energy, fuel, and so on. The enterprises are now entitled to spend a larger share of their profits on modernizing and retooling, on increased workers' wages and bonuses, on building houses and preschool, child-care, recreational and sports facilities. In a word, the well-being of a plant or a factory will depend directly on its performance.

The next stage of development of economic management is expressed in essence by the word "self." For example, a system of self-financing was started at the Sumy Machine-Building Amalgamation in the Ukraine and at

the Volzhsky Auto Works in the city of Togliatti in 1985. The plants were to cover the costs of technological upgrading, modernization and expansion with their own funds. As a result, for the very first time, an economic interest in thrift and in the search for the most effective way to mechanize, automate and use optimal technologies began to materialize. Efforts to obtain this goal had been made earlier, too, but without the same enthusiasm now being shown and without provision for compensation with a tangible reward.

Preliminary results of the self-financing system show that the forecasts were well-founded. In 1985 the Sumy Amalgamation fulfilled all of its supply contracts. Output increased by 14.4 per cent, profits by 33.3 per cent and the material-incentive funds by 150 per cent compared with 1984. Labor productivity increased by 13.6 per cent, and the average monthly wage of workers was up by 6.1 per cent as against January 1984. Bonuses paid to engineers and technicians made up half of their salary.

Do plants and factories have sufficient autonomy in short-term and long-term planning? For the time being, the answer is No. Until recently, their operation was almost completely determined from above. On the one hand, suppose a branch manager's decisions proved to be wrong. It would be unwarranted to evaluate the work of the plant workers by the end results

because they were guilty through no fault of their own. On the other hand, "most-favored-plant" treatment on the part of higher management agencies and profitable centralized assignments might have had much more to do with the successful performance of an enterprise.

This gave rise to a contradiction between the principles of paying for one's work and rendering social justice.

The acceleration strategy presupposes complementing centralized planning with self-planning. Industrial plants will now have to study demand and to actively influence the market by supplying products of ever higher quality. Self-planning will require a critical review of different variants of supplies of raw and other materials, comparison of their quality and selection of the best partners. The search for the enterprises's own sources of income will become more intensive, and the enterprise itself will decide in which trades workers should be trained or retrained.



Growth of Labor Productivity In Comparison with 1985

Is there any contradiction between the self-planning concept and the principles of socialist economy? Not in the least. Conversely, the development of greater autonomy of work collectives in the areas of production and finance means the consistent democratization of management.

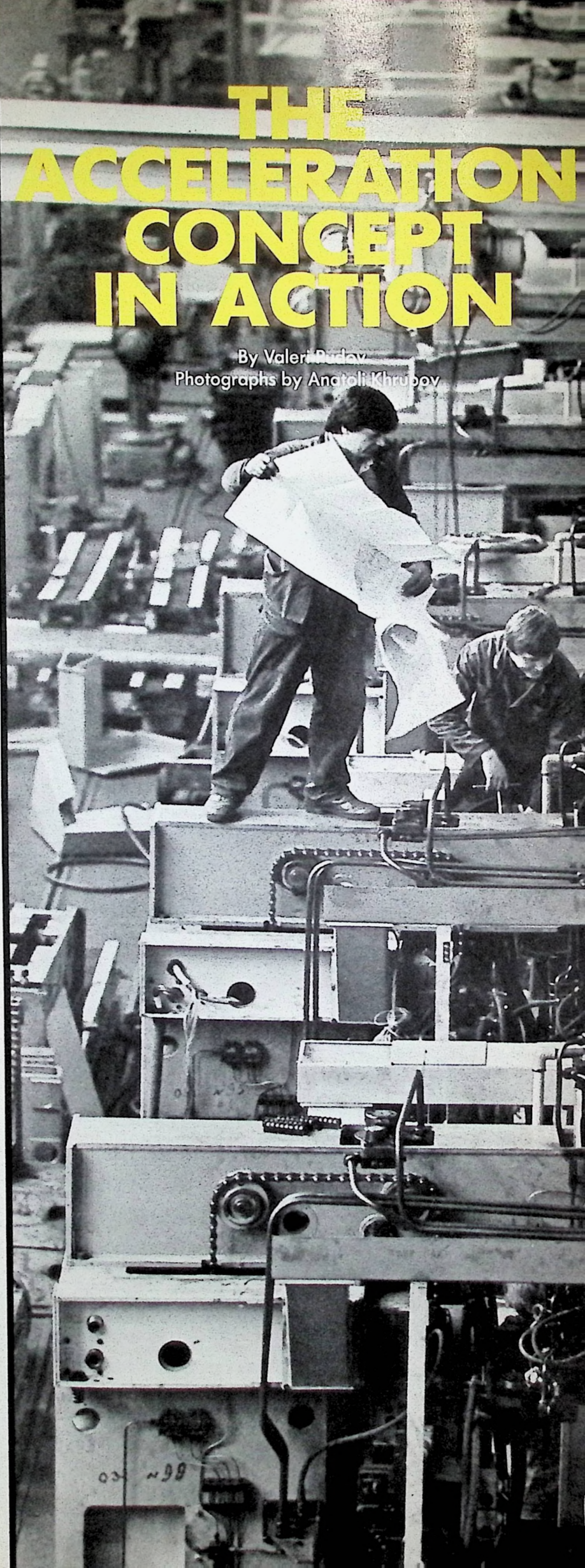
Is the time ripe to do away with centralized planning? No, not at all. But a review of our concept of it is necessary. Centralized planning must acquire economic features. Until recently there was a markedly administrative character to centralized planning, which was once justified. Now we are experiencing the situation where a "plan contract" should be introduced instead of a "plan order." For example, when a plant's manufacturing program, say, tractors, doesn't meet the requirements of the national economy, the state places an order with the plant to turn out new products. The manufacturer cannot refuse because that would not be in the national interest. But the state, in placing the order, also can not ignore the self-supporting basis underlying the work of the plant. In effect, it is a contract between society and individual production units.

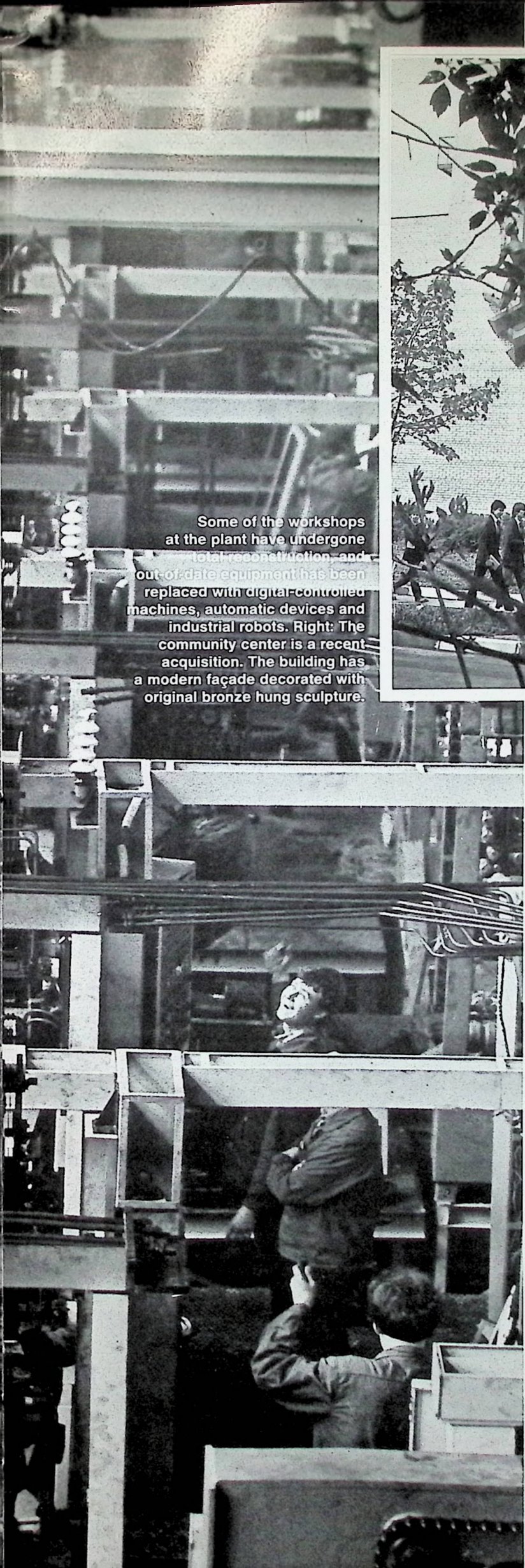
Our experience in economic restructuring is continually becoming richer as we master the ever deeper layers of effective management. Our model of effective management is acquiring concrete forms as increasing numbers of plants and factories are drawn into the orbit of the new economic mechanism and are passing through the necessary stages of transformation.

The first stage is the completion of the switching of all industrial plants and industries to new economic management terms that have been tested on the large-scale nationwide experiment. The experience of the Sumy Machine-Building Amalgamation and of the Volzhsky Auto Works can be regarded as the second stage of the transformation of the economic management mechanics, the stage that will soon be introduced on a mass scale. Other proposals, including those I have already mentioned, contain elements of the third stage. It will be tested during the current five-year plan period (1986-1990). ■

THE ACCELERATION CONCEPT IN ACTION

By Valeri Rudav
Photographs by Anatoli Khrubov





Some of the workshops at the plant have undergone total renovation, and out-of-date equipment has been replaced with digital-controlled machines, automatic devices and industrial robots. Right: The community center is a recent acquisition. The building has a modern façade decorated with original bronze hung sculpture.



The main item on our national agenda—accelerating social and economic growth—requires restructuring economic activity from top to bottom. The winds of change have reached the Moscow Transfer Lines Plant, too, which, like the rest of the Soviet economic scene, is slated for major reforms.

The Moscow Transfer Lines Plant manufactures transfer lines and special automatic machinery that are used at engineering enterprises around the country as well as abroad.

"Lathes are crucial for the engineering industry," the plant's general director, 45-year-old Vladimir Shcherbakov, told me. "It's our job to start producing top-class machinery as soon as possible, and this will involve many things. First, every level of the production process and management, too, must become more efficient.

"Second, the labor issue must be settled at long last. The most efficient people must hold the key positions. For example, over the past 12 months I have appointed, with the union's consent, of course, several new department heads and service managers. Most of these people are young, competent and energetic. Many began working here on the shop floor and studied part time at technical colleges. [Incidentally, that's the case for the director himself.] For the people we can't use, we find other jobs, jobs more suited to their qualifications, age and personality.

"Third, the atmosphere at the plant should foster creativity and initiative among the personnel. We must be more sensitive to the workers' needs and satisfy their wants without delay."

I asked the general director to elaborate on his last remark.

"Five years ago," he said, "we took a poll of the workers. In it they said that housing was the main issue, so we began coping with that matter. A recent survey shows that health is the main concern. So now our focus is on doing everything so that the workers can have wholesome leisure, on stepping up medical supervision of all stages of production and on encouraging sports and physical fitness."

Modernization

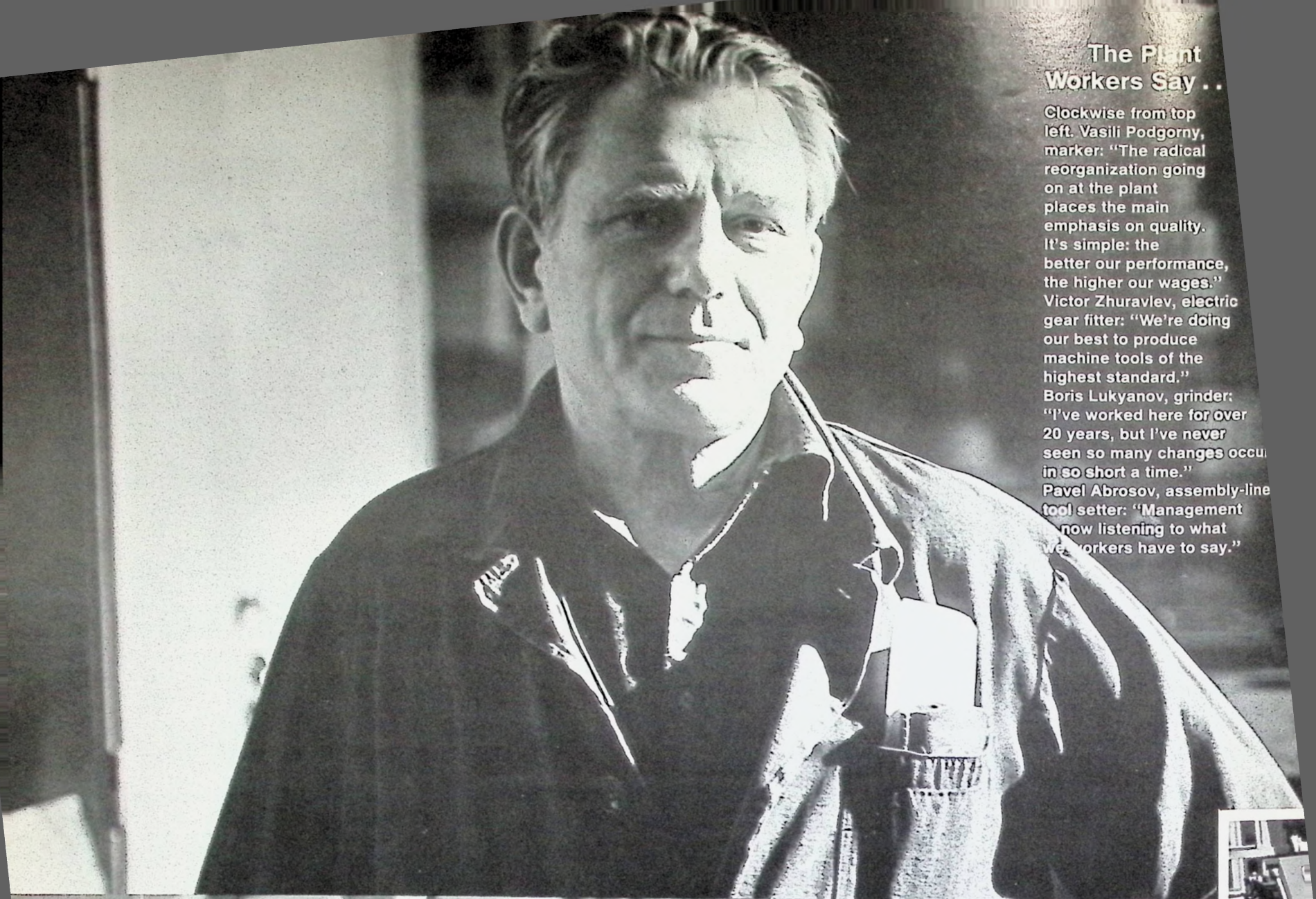
In 1898, in a Moscow suburb, Alfred Gutman and Co. set up workshops to make hoisting and conveying machinery. Following the October 1917 Socialist Revolution, the workshops were nationalized and transformed into the Podyemnik Plant. The plant is like a grandfather, in terms of age and output. In 1958 the Podyemnik Plant was converted to turn out automatic production lines.

I asked the plant's deputy chief technologist, Yuri Wulf, to tell me about the plant.

"The plant is not large," Wulf said. "Its nine production departments and four service shops take up 12 hectares. Most of our equipment is new and Soviet-made. We particularly like the machine tools that come from Ivanovo. Situated in Central Russia, Ivanovo is traditionally a textile center. Nowadays, machine tools comparable to ▶

The Plant Workers Say . .

Clockwise from top left. Vasili Podgorny, marker: "The radical reorganization going on at the plant places the main emphasis on quality. It's simple: the better our performance, the higher our wages." Victor Zhuravlev, electric gear fitter: "We're doing our best to produce machine tools of the highest standard." Boris Lukyanov, grinder: "I've worked here for over 20 years, but I've never seen so many changes occur in so short a time." Pavel Abrosov, assembly-line tool setter: "Management now listening to what we workers have to say."





Above: Boris Yeltsin (left), First Secretary of the Moscow City Party Committee, on a visit to the plant. The needs of the machine builders are a growing concern of the committee.



foreign-made types are also manufactured in the city.

"The plant has some 100 numerically controlled machines, including nine machining centers. Two complexes using industrial robots were recently installed. One operator is now doing the job of three or four workers.

"We are expanding. We are building new production units, and we need more personnel. Workers whose old jobs were lost through automation are given new jobs. They are retrained in new, modern trades and receive higher wages. The plant management has arranged for the workers to be trained during the regular work hours, so they don't lose out on wages.

"Reconstruction and retooling are proceeding on schedule," Wulf went on to say. "Last year new technology raised productivity 50 per cent. We are now manufacturing lathes that we used to import. Our target now is to supply major engineering plants with the lathes as soon as possible. We have just delivered our latest models to the new departments of a Moscow bearing plant. Our exports are continually growing, too."

People in Focus

What aspects of the worker's job and the worker's life are changing?

Vyacheslav Pyka, 44, heads a team of lathe operators. A Moscow native, Pyka was born into

a worker's family. He took a job at the Podyemnik Plant when he was 16. He is now at the top of his skill category. Pyka is married and has two daughters. One is studying to be an industrial economist; the other is in high school.

"What's changing?" Pyka repeated my question, and then answered, "People's views. Still, until recently we waited for management's initiative, but we're beginning to act more on our own. Now the workers frankly criticize anything that interferes with effective work and life. This goes for the supervisors as well as the director himself. For example, at the most recent meeting gear cutter Vladimir Yashin told the supervisors that they shouldn't lose any time in getting their own work in order."

As the leader of the plant's team council, Pyka is aware of everything occurring at the enterprise. The plant is experiencing major changes, mostly on the team level.

This year many teams are switching to profit-and-loss accounting, which means they are becoming decision makers. Now the only target the teams receive from above is a monthly output figure, which has been arrived at through preliminary discussions with the teams themselves. At the present time, a team's earnings are determined by output and quality. Within the team, wages are distributed according to a labor participation coefficient.

The procedure looks simple enough. The team



Workers relax in the plant steam bath. Top: A ballroom dance club has been meeting in the plant's community center for years. The center's aim is to involve workers in the arts.

evaluates every worker's contribution to the common effort for the previous two weeks. All specifics are taken into consideration, such as the volume and quality of work and the skill and efficiency of the worker. For example, suppose there are seven shares to be distributed among ▶



Students of the vocational school attached to the transfer line plant. By the time these young men graduate—it's a three-year program—they will have a general education on-the-job training and skilled workers' qualifications. Above: Sergei Dergachev, 16, a vocational school student who has chosen to learn the trade of machine operator.

The spirit of acceleration is obvious in the workshops, in the manager's office and in what the workers have to say.

seven workers. One worker is entitled to 1.5 shares; while another, to 0.5 shares, all factors considered. Incidentally, the team leader's share is by no means the largest.

In recent months the wages of Pyka's team have grown appreciably, and productivity has risen 50 per cent.

What's Good for the Plant Is Good for the Workers

Victor Kuznetsov, who heads the plant's union local, told me: "Before the reforms were implemented, we also dealt with incentives. Every month bonuses were given to the best teams as well as to individual workers. But, then, quantity was the decisive factor in determining bonuses. Now quality is taken into account, too. Until very recently workers got extra money for every quality component. Now the extras are given only when 80 per cent of the output is of the highest standards. This is more difficult to achieve, but increments are now bigger, and quality has greatly improved."

How did the workers react to the changes?

"There was disagreement, of course, but after long discussions the teams were unanimous that the new system would be good for the plant and for every worker as well. Earnings haven't fallen, except for those who were doing slipshod work.

"As for conflicts, the Labor Disputes Commission meets rarely because disagreements are usually resolved without formalities. For instance, in one section a dust collector wasn't being repaired, so the workers complained to me about it. I took the matter up with department Superintendent Vladimir Khokhlov. He was new in his job and probably hadn't yet learned to keep an eye on everything. We talked the matter over, and the dust collector was repaired without delay. Khokhlov offered an explanation to the men."

Besides production matters, what else is new?

"We have stepped up construction on another block of apartments. Over the next five years we'll complete four more buildings. The union decided to close the dormitories for young workers who come from other areas of the country and to accommodate them in apartments instead. With union funds we're renovating a summer camp for the children of our workers, so they'll soon have a swimming pool."

After Work

I learned many things from Boris Soloveichik, who not too long ago became the director of the plant's community center. The center is funded by the union. Within a year Soloveichik has attracted hundreds of workers and their families to the center's amateur art clubs and other wholesome pursuits. The director is particularly proud of the modern dance club he organized and the routine visits of popular Moscow actors, who come to the center to perform and to talk to workers.

Yuri Golovyashkin, who heads the plant's sports center, told me that jogging is the current vogue here. Regular running events attract as many as 500 participants to the plant's stadium. This year the plant won the annual athletics championship of Moscow's industrial enterprises.

"It was no accident," said Golovyashkin. "Management, particularly the general director, thinks a lot of jogging. Every morning before work, the general director himself jogs several kilometers, and he's also on the plant's volleyball team."

Last year management allocated 40,000 rubles for sports, one-third more than it had the previous year. This confirms what the general director told me. "The workers' health is of major concern."

Everything For Peace Not War . . .

The Moscow Transfer Lines Plant produces nothing for the military. That's why the workers there strongly support the latest Soviet peace initiatives. "To make our life better, peace is essential," they say.





НАПРАВЛЕНИЕ К ВЫСТАВКЕ
ПОД ПРАВИТЕЛЬСТВОМ НАШЕЙ СТРАНЫ

ВСТРЕЧАЕМСЯ НА ВАРЯХЕ
НАШЕЙ СТРАНЫ И ВОДЫ

ММР

ВСТРЕЧАЕМСЯ НА ВАРЯХЕ
НАШЕЙ СТРАНЫ И ВОДЫ

ВСТРЕЧАЕМСЯ НА ВАРЯХЕ
НАШЕЙ СТРАНЫ И ВОДЫ

YOUNG FAMILY

EVERYDAY CARES

By Vladimir Kanash
Executive Secretary,
News from the Ukraine, Kiev

Photographs by Igor Kostin



Right: The Magitov family—Anatoli, Nadezhda and two-year-old daughter Natasha—live in Kiev, the Ukraine. Above: On an outing in the city.

Anatoli Magitov and Nadezhda Zabolotnaya of Kiev, capital of the Ukraine, were married five years ago. They have a two-year-old daughter Natasha. Anatoli is a toolmaker at the Kiev Electromechanical Plant, while Nadezhda is a ballerina with the Children's Music Theater. The Magitovs are typical of many young families living in a big city.

The average Soviet family has three or four persons. However, 155,000 families of 10 or more members reside in Soviet towns and about 466,000 in the countryside.

Anatoli is 33. He was born in the small Ukrainian town of Merefa. He completed eight years of secondary schooling and continued his education at an electrical engineering college. By the time Anatoli finished college, his parents had moved to Kharkov. He decided to live on his own and went to Kiev. He found a job as a toolmaker's apprentice at the local electromechanical factory and living accommodations in the factory's dormitory. After a stint in the army he returned to work at the factory, and three years later reached the top grade in his trade.

Anatoli makes good money—from 250 to 300 rubles a month. For the past two years he has been the leader of his shop's trade union committee. It's an honor to have been elected to this post, but it does not release him from his work. On the contrary, he now has more to do, but that only en-



hances his prestige at the factory.

Nadezhda is four years younger than her husband. She was born and bred in Kiev. After graduating from the Kiev School of Choreography, she joined the Ukrainian Folk Dance Ensemble. When Natasha was born, Nadezhda left the ensemble because it tours a great deal and she didn't want to leave her small child for long periods of time. Later she joined the ballet troupe of the Children's Music Theater.

About three million marriages take place in the Soviet Union every year. In 1981 half of the bridegrooms were under the age of 24, while half of the brides had not yet turned 23. The largest number of married men is between 40 and 60 years old, while the greatest number of married women is between 25 and 40. The most stable marriages are found in Yerevan, Armenia, and Baku, Azerbaijan. The greatest number of divorces occurs in Alma-Ata, Kazakhstan; Riga, Latvia; Kishinev, Moldavia; and Moscow.



Anatoli and Nadezhda have many friends, and they often entertain in their home. Left: The couple has been married for five years, but Anatoli, always the romantic, frequently stops by the florist on his way home from work to pick up a bouquet for his wife. Below: Anatoli is a toolmaker at the Kiev Electromechanical Plant and Nadezhda is a ballerina with the local Children's Music Theater. They have busy careers, which makes the time spent together as a family especially precious.

Anatoli and Nadezhda met at a party, the same way thousands of other young people meet. In three months they were married. Nadezhda's parents thought it was too soon, but they've since changed their minds about that and they're very fond of Anatoli.

Let's hear what the young couple themselves have to say.

Anatoli: Nadezhda has always been willing to give up a lot for the sake of home and family. Right after we got married, she moved into my small room in the dormitory, giving up her comfortable home with her parents. But she was afraid that if we moved in with them, there'd be more chance for straining my relations with them. Creature comforts aren't worth much if accompanied by psychological discomfort.

Nadezhda: What I value most about Anatoli is his reliability, and



he always helps out around the house. More importantly, he doesn't let small matters complicate our life.

Anatoli: When Natasha was born, we were faced with the problem of living space. We had two options: We could wait until the municipal authorities provided us with an apartment free of charge or join a housing cooperative. This meant we had to make a down payment amounting to one-fourth of the price of the apartment. The remainder of the cost would be covered by an interest-free loan provided by the state, which we could pay back in installments over a 25-year period. We chose this option, and in six months we had a two-room apartment situated in a new neighborhood where mostly young people live. These co-ops have other benefits too. If a couple can't ▶



Just like Mommy—Natasha works her own “routines” at the mirror. Right: To the happy two-year-old bathtime is synonymous with fun. “She loves it,” says Nadezhda. Below: The couple says that neither of them can remember who was the first to suggest morning jogging along the Dnieper riverbank. But it doesn’t matter. Now both of them look forward to the fresh air and exercise, which they claim keeps them going for the rest of the day.

two months before and two months after the delivery—and part of my salary as child-care leave till her first birthday, I missed the theater. So when Natasha turned one, I was faced with what to do next. I didn’t want to take her to the nursery yet, and my parents were working and couldn’t take care of her, so we hired a nanny for a year. I think Natasha is ready for the nursery now. Anatoli and I believe it’s important for children to be around youngsters their own age. By the way, it’ll cost us only 10 to 12 rubles a month to keep Natasha in a nursery.

The maintenance cost in a nursery comes to more than 600 rubles a year per child; in a kindergarten it’s more than 500 rubles a year; however, the state covers 80 per cent of the expense.

Anatoli: Natasha is really a



come up with enough money for the down payment, they can obtain a 10-year loan of 1,500 rubles from the state.

These new neighborhoods are especially convenient because of the day-care centers, schools, shops and cafés that go up at the same time the apartments are being built. There are also playgrounds and sports fields for children and adults.

We had enough money for our down payment, but when we moved in, we wanted new furniture, so both of our parents helped us out. We decided for now, though, to put off getting a bigger car.

Nadezhda: Natasha’s birth was a big event for both of us. Frankly, I was just a bit scared that our relationship might change when the baby came. I realize now, it was all needless worry.

I stayed at home with Natasha for the whole first year, and though I received full prenatal and postnatal benefits from the state—



healthy child, but when she does get sick, Nadezhda stays home.

A parent is entitled to paid sick leave to take care of a child who is ill. Routine medical checkups with a pediatrician, eye doctor and dentist are free. In 1984 there were more than 27,000 children’s health-care centers, outpatient clinics and centers for prenatal care in the USSR. The same year more than 46 billion rubles of the State Budget was allocated for social insurance. Out of this sum, more than three billion was spent on maternity and childbirth leaves. Subsidies for children of low-income families came to 751 million rubles. About two million large-family households received monthly grants.

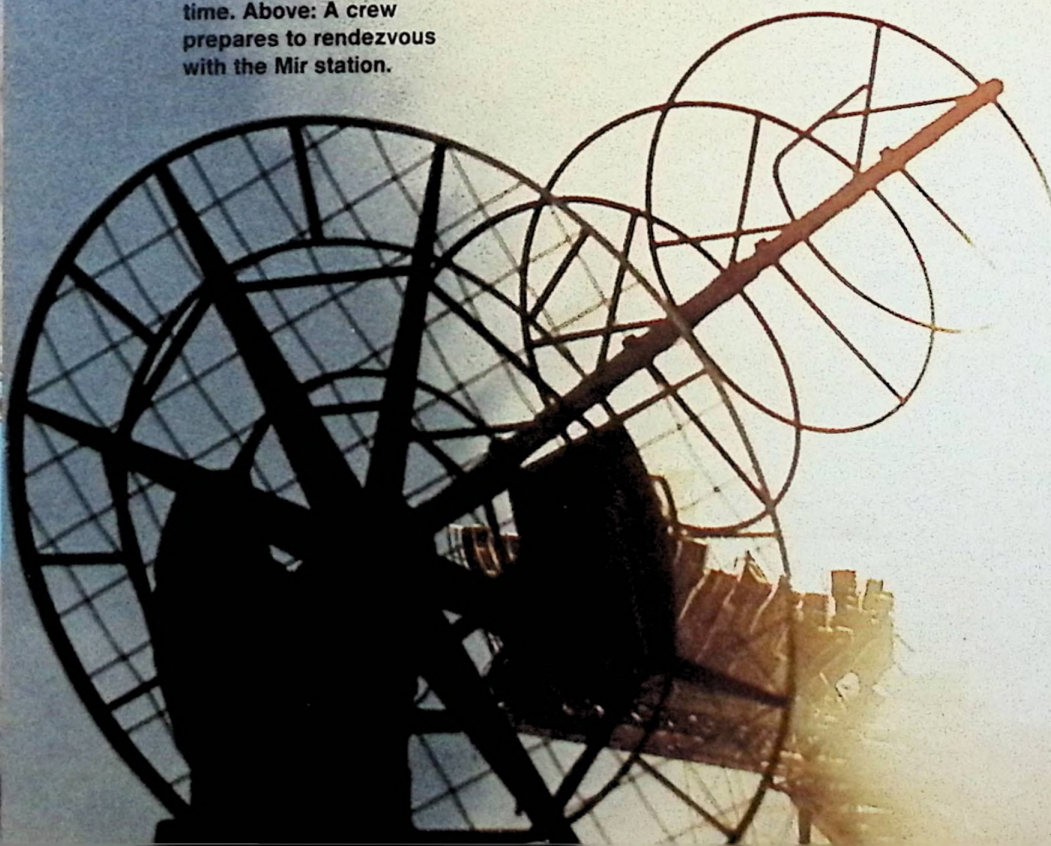
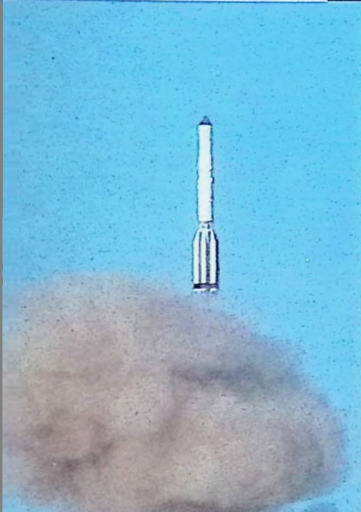
Nadezhda: Anatoli has a penchant for farming. I suppose it runs in the family because his grandfather is a farmer. Compared to him, I’m an urban misfit. Anatoli has an extraordinary love of the land and nature. I hope our daughter has inherited it. ■

SPACE



Shooting For the Stars

Three . . . two . . . one . . .
LIFTOFF! The Proton,
a powerful carrier
rocket, is on its
way to put the Mir
orbital station in space.
A new generation
research station,
the Mir is now
operating in near-Earth
orbit. The station's
design and on-board
equipment make it
possible to set up
a solid research
center in orbit, which
can handle crews of 10
to 12 cosmonauts at a
time. Above: A crew
prepares to rendezvous
with the Mir station.



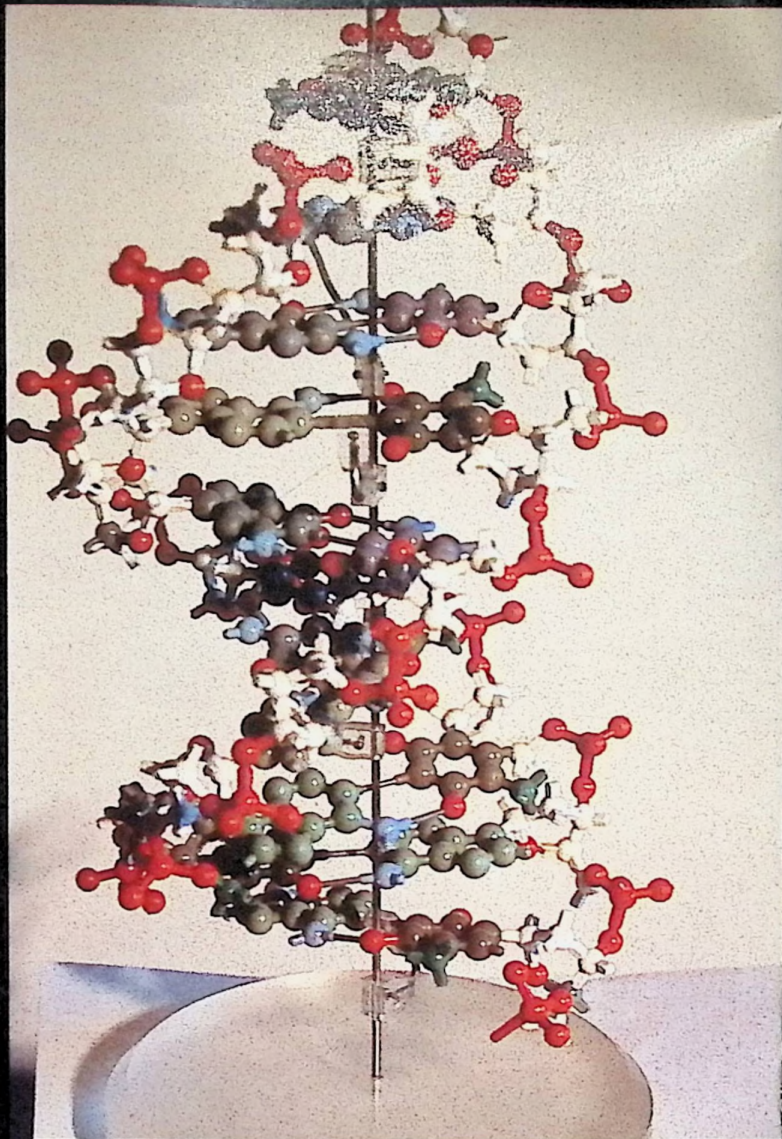
SCIENCE *takes the floor*



central control room of the Integrated Power Plant of the USSR. The grid makes it possible to efficiently channel the energy generated by the dozens of power plants in the country. Below: A module of the experimental installation devised by a research group at the Institute of High Energy Physics in Protvino, where a new fundamental particle was discovered.



Right: A specimen of superpure material obtained at the Institute of Chemistry in Gorky, Central Volga Region. The level of purity of metals and other materials that can be achieved today is a revolution.

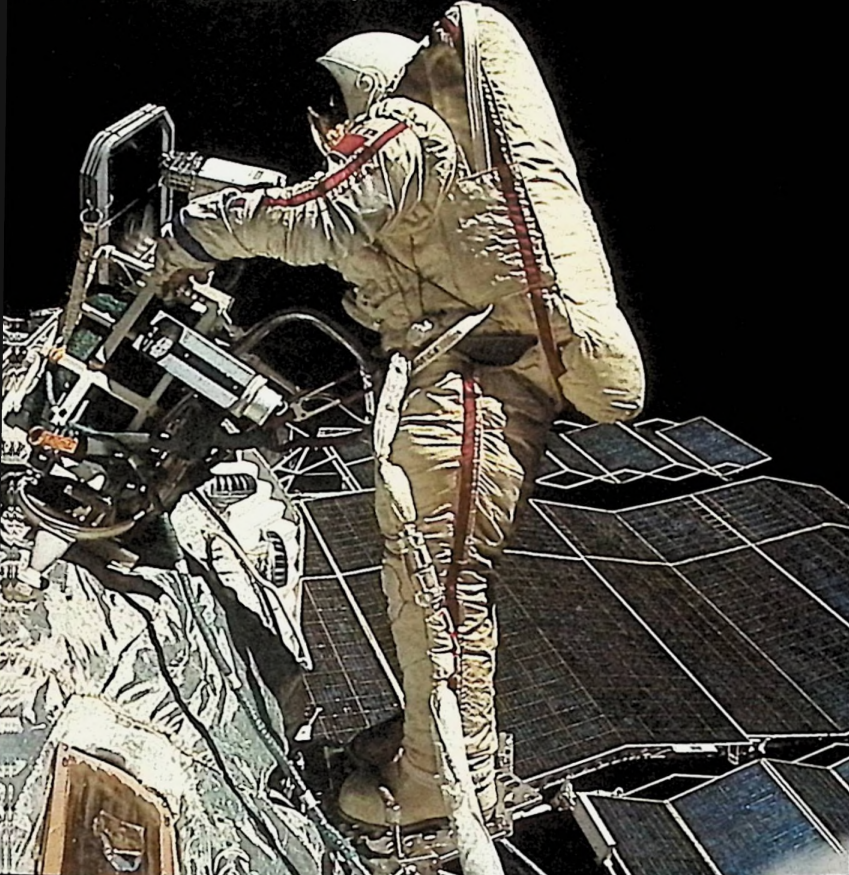


Above: Yevgeni Sverdlov heads a group of biotechnologists studying nucleic acids at the Institute of Molecular Biology of the USSR Academy of Sciences. The group is researching the practical aspects of genetic engineering. Right: Deeply involved in combating cancer, the scourge of the century, Soviet oncologists hold out great hope for progress being made in biological research. A model of antioxantine—a new antitumor protein

Genetics is in the vanguard of the high-tech revolution. Soon Soviet researchers will obtain new types of microorganisms for wide use in the production of pharmaceuticals and biologically active compounds.



Soviet welding experts are acknowledged leaders in their field. They have developed welding techniques for all metals, alloys and plastics known on Earth, and they have met the space challenge, too. Here cosmonaut Svetlana Savitskaya carries out a welding experiment in space.



Above: Integrated circuits developed through the joint work of physicists, chemists, crystallographers and mathematicians have greatly expanded applications for computers, making calculators accessible to everyone. Below: The Krasnoyarsk Hydroelectric Power Station on the Yenisei River in Siberia is one of the five major hydroelectric power plants in the world. It has a capacity of six million kilowatts and has an average

annual output of 20 billion kilowatt-hours. Bottom: Physiologists at the Institute of Biophysics in Moscow are concerned with the optimum routine for people dealing with automatic systems, computer transportation. In the photo—A graph of the wave process of the human heart. Below left: Marine geologists have been prospecting for new oil and gas fields on the shelves of seas and oceans. In the Caspian Sea near Baku, Azer



SCIENCE *takes the floor*

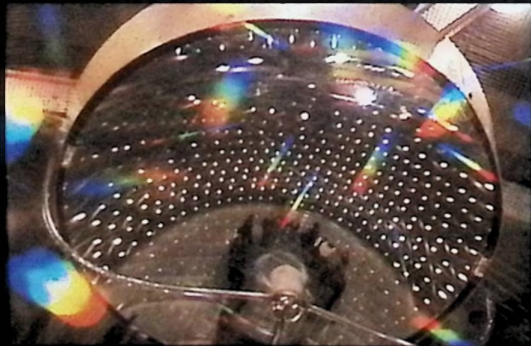


Ecology is probably the most recent and the most promising science in the USSR. The ecologist's main tasks are to preserve, protect and increase nature's bounty. Left: Estonian ornithologists at the Puhtolaid Nature Preserve are conducting experiments that will protect the wildlife of the region. Below:

Marine biologists face an important task: setting up farms in the ocean and replacing traditional fishing methods with fish farming and mariculture.



Researchers at the Repeteksky Nature Preserve in the Kara-Kum Desert, Turkmenia, check devices that have been set up to observe sand movements.



Above: Workers at the Central Research Institute of Town Building study lighting and sound insulation in apartments. New housing designs are tested for artificial lighting and noise. Left: The staff at the Institute of Physics has developed and is perfecting a technology for growing single crystals—fianites. Since there are so many fields in which the crystals can be used, it's hard to predict their future—but everyone says it's sure to be prosperous.



Recent technological advances in oceanography are making it easier for scientists to learn about marine life and underwater geologic formations.

Several prominent Soviet scientists discuss their area of specialization—its past and future.



Igor Glebov, member of the Academy of Sciences of the USSR and director of the National Research Institute of Electrical Engineering in Leningrad.



Boris Paton, member of the Academy of Sciences of the USSR, president of the Academy of Sciences of the Ukrainian SSR and director of the Paton Institute of Electric Welding in Kiev.

The future of electrical engineering lies in the development of fundamentally new energy-converting machines that will use the superconductivity effect, for example, cryogenic turbine-driven generators. The first generator in the world like it has already undergone commercial tests and will be introduced into Leningrad's power supply network.

Substantiated data forecasting the development of power engineering till the end of the century indicate that the capacity of turbine-driven generators must increase. But what hindered the process was the insufficient strength of the steel rotors, the vibration of the machines and, finally, the limitations imposed by the transportation of large-sized units. Therefore, it became necessary to find fundamentally new technical solutions. This brought about the idea of using the superconductivity effect. The capacity of generators employing the effect is two to three times greater than that of the usual units of the same size. The design of the new generator was the result of joint work by a group of scientists from Leningrad.

What is the main feature of the new generator? Its rotor is made of fine threads of superpure niobium and titanium alloy, which have been dipped into liquid helium at a temperature very close to absolute zero—minus 269 degrees Celsius. The rotor's speed is 3,000 revolutions per minute. Also, there are none of the losses that are usually associated with heating of the rotor winding.

Outwardly, the new turbine-driven generator resembles the old ones. The only differences are that it is much smaller in size and has a liquid helium input covered with a thin coating of frost near the slip rings.

The efficiency of the machine has been improved too. Its weight has dropped by 2.5 times. For instance, the weight of the new rotor is only one-fifth that of the old one. And costly gas losses are negligible since the gas circulates inside a closed system.

Another superior feature of the cryogenic generator is the new design for its stator winding, which makes it possible to obtain voltage four to six times higher than that produced by modern thermal and nuclear power plants. Hence, there is no longer a need to use step-up transformers, which results in a substantial savings of valuable nonferrous metals.

The capacity of the production prototype is limited to 20,000 kilowatts; however, construction of a much more powerful unit, with a capacity of 300,000 kilowatts, has already begun.

It's safe to assume that the prospects for wide-scale use of machines employing the superconductivity effect are linked with progress in cryogenic equipment.

I believe that by the beginning of the next century superconductive turbine-driven generators with a capacity of three, five and more million kilowatts will become a reality. Perhaps these giants will not need helium because by then we'll be able to achieve the superconductivity effect at somewhat higher temperatures than is presently possible.

The use of the superconductivity phenomenon in the power industry is not confined to turbine-driven generators. Even today there exist designs for superconductive inductor energy accumulators that can build up reserves of energy on the scale of national power systems.

Plans call for developing AC and DC cryogenic power transmission lines. The advantage of these lines is that there is virtually no energy losses in their refrigerated cables, which are made of pure niobium. Superconductive windings will most likely find wide application in the electric motors of ships and drive systems of rolling mills. Cryogenic magnetic systems can also be used in high-speed transportation systems employing a magnetic suspension, as well as in many other branches of technology and science.

Hundreds of branches of research and development institutions, design bureaus, higher educational establishments and manufacturing enterprises are working in the area of welding and related technologies in the USSR. Through coordinated efforts, technological welding processes for virtually all existing metals, alloys and plastics have been developed. Welded structures of titanium and titanium-based alloys are used in chemical engineering, aviation technology and many other industries. Work is in progress on producing welded structures of molybdenum, niobium, zirconium, beryllium and other rare metals; and welding of polymer materials is also being intensively developed. Apart from arc, electroslag and resistance welding, new high-efficiency welding processes are being employed, notably, electron beam, plasma-arc, high-frequency, explosion, friction, solid state and laser welding.

It is important to take note of the comprehensive character of research when the manufacturing processes and the required equipment and materials for it are developed simultaneously. Results show there is a subsequent speedup in the use of new products and processes in production. At the same time research is oriented as a rule toward producing a tangible practical effect. Here is just one example.

Of particular concern to experts in pipeline construction is something known as avalanche cracking. This phenomenon occurs when the metal in the pipe fails under the effects of extremely cold temperatures or high pressures. However, in the near future pipelines will be called on to operate at even higher pressures than they do now. If the pressure is too great, a rapidly forming crack can literally burst open the pipe, putting the pipeline out of commission for some time. Efforts are now being made to solve the problem with pipes made of steel combined with niobium, nickel and molybdenum.

A fundamentally new pipe welding unit, called the Sever (North), has been developed at the Paton Institute. The fully automatic Sever moves along the inside of a pipe as if threading the individual sections together. When it reaches a spot to be joined, the unit stops for two or three minutes to complete the weld and then moves on to the next spot to be welded. New generations of the Sever are now being developed for use in pipes of different diameters.

Construction of pipelines using plastic pipes may offer tangible economic benefit. The pipelines can be used for transporting various products—including natural gas—at moderate pressures and temperatures. The plastic pipeline being built in Nikolayev Region, the Ukraine, is our first large-scale pilot project of this type.

What's in the future for welding? It's safe to assume that welding will remain the basic method used for assembling fixed structures in machine building, in industrial construction and in other sectors of the economy that require large quantities of metal. However, there will be a gigantic, qualitative leap forward in the areas of welding processes and techniques.

The use of electron-beam welding in the manufacture of heavy equipment as well as in space exploration will markedly expand. The use of continuous-action lasers in welding will also increase. It's quite possible that the laser beam will replace the electric arc in some traditional fields. Plasma jet, flame, explosion and electric-arc spraying will be developed at a rapid pace in the coming years, too.

Robots and robotized complexes should be helpful, but automating the production of welded structures leads to the need for flexible production facilities that can not only carry out the welding operations but also can assemble, transport, inspect and repair complete structures.



Andrei Monin,
corresponding member
of the Academy of
Sciences of the USSR
and director of the
Institute of
Oceanography in Moscow.

Oceanography is a science that combines physics and chemistry of the ocean, marine geology and biology, and underwater exploration technology. Headway is being made in all these fields.

In recent years an important and unexpected discovery was made in ocean physics or, to be more precise, in ocean hydrodynamics. Huge vortexes that can be compared to cyclones and anticyclones in the atmosphere were discovered in sea currents. Ranging in size from 100 to 200 kilometers, the vortexes create synoptic changes in the currents. The short-term objective of our research is to determine the properties of the vortexes and the role they play in the dynamics of the ocean.

Marine geology is another field in which new findings frequently occur. The latest one involves the discovery of sulfide-rich deposits in the Mid-Atlantic Ridge zone. This find is clearly superior to the iron and manganese concretions discovered earlier because the sulfide ore was found closer to the surface where it should be easier to recover in principle. Moreover, the concentration of metals in the ore, notably cobalt, zinc and nickel, is much higher. The main thing now will be to determine if the reserves of sulfide ore in the ocean are of commercial importance.

New offshore deposits of oil and gas are being discovered. Estimates of the world's reserves of these two commodities are now higher than they were even a few years ago.

Since the adoption of the law on the sea, which grants to coastal nations rights to develop a 200-mile zone extending from their shores, many countries, including the Soviet Union, have had to reorient their fishing fleets toward operating on the open seas. Marine biology was most helpful in this respect. Earlier it was thought that concentrations of fish would be found mainly in the shelf zone, where depths do not exceed 200 meters. However, biologists have now determined that vast resources exist on the open seas as well, and fishing operations are successfully being conducted there.

Major advances have been made in the equipment used in underwater operations. For example, let's consider operations at depths not exceeding 400 meters. At such depths the pressure reaches 30 atmospheres, and divers clad in heavy diving suits can accomplish very little. Now such depths no longer present a problem, thanks to the special high-pressure chambers that are used at practically all offshore oil fields.

Today marine biologists must set up fish farms in the ocean and replace the conventional fishing methods, which are essentially based on the hunting principle, with fish breeding—mariculture—not only in the coastal zone but also in the open sea. This will be a monumental task. Accomplishing it will require a thorough study of food fish species, their ecology and life cycles. Fishing quotas and methods also need to be established. As for mariculture, a special laboratory at the institute has already begun working on this, and some fish species have been resettled from one region of the country to another. For example, mullet from the Black Sea was resettled in the Caspian Sea. It has adapted well there; moreover, it has become bigger.

During the new phase of the acceleration of scientific and technological progress we expect important results from marine geology, specifically, exploring the iron and manganese concretions, sulfide ore and iron and manganese crust rich in cobalt. The latter was discovered on the slopes of underwater mountains. At present we are developing techniques for extracting valuable metals from these geological formations.

Other areas that hold much promise are navigational safety, submersible sea transport, such as submarine tankers, and ocean chemistry, among others.



Platon Kostyuk,
member of the
Academy of Sciences
of the USSR and
director of the
Institute of
Physiology in Kiev.

The most important development in physiology in the past few years is that we've managed to get down to the molecular level of the fundamental processes taking place in the nervous system and to determine which specific molecules make the nerve cell unique. The success of our biological experiments was made possible by the latest breakthroughs in physical chemistry, electronics and computer development.

It's now possible to measure with a high degree of accuracy the activity of nerve cells and the macromolecules causing it. For example, we can determine how densely the specific molecules are concentrated on the membrane of the nerve cells, how their number changes as the cell develops or, conversely, as it ages. Moreover, we can now isolate such molecules from the cell, even though there are only a few of them, one might say, an infinitesimally small number of them. This has brought us fairly close to understanding what makes up the molecules and which combinations of atoms underlie this kind of highly specific structure. All this is very interesting!

So what are the specific molecules that give the nerve cell its unique properties? For the most part they are very large structures—very complex protein formations—that are built into the surface cell membrane. They form a very important microlink in the nervous system, playing the decisive role in the emergence of a nerve impulse. It should be noted that these proteins are highly vulnerable: The slightest attempt to influence them in any way by the usual means causes them to lose their properties and prevents them from performing their functions. We had to work for quite some time to isolate them in an unspoiled state. Fortunately we've solved this problem for the most part. Moreover, it's possible to make the molecules work in another, artificially made, membrane that has been reproduced according to the mold of the natural one.

All of our work is bringing us closer to the day when we'll be able to change the structure of the most important molecular formations of the nerve cell. This research is very important for medicine and the pharmaceutical industry.

If specific molecules of a nerve cell can work in an artificial membrane, then why can't this capability be used to develop, say, integrated circuits or computer systems employing the principle of operation of the nerve cell? Of course, we've come up with computers that are more than a match for the human brain in many respects—for example, in the number of operations performed per second—but so far we've failed to create anything similar to the brain in reliability and flexibility. And we're a long way from it. Therefore, the use of the principle of operation of the nerve cell is of paramount importance for technological progress.

Automatic equipment and computer facilities—there's no denying the fact that these exist. But it's people who operate them. And the more sophisticated the equipment, the more complex the job of operating it. If we think only of the technology forgetting man in the process, nothing good will come of it.

And what about the new spheres where we are forging ahead—space, high altitudes, the ocean's depths? Definitely, it's impossible to deal with these problems without turning to physiology.

Perhaps the most promising areas in physiology have been charted by the discoveries made in the last few years. I have already mentioned some. There is also research into the specific structures on which nerve activity is based and the search for the substances that are linked with those structures. The work done in this area has given us a greater understanding of the mechanism of how painkillers work to relieve pain and of how acupuncture works.



"From friendship in sports to peace on Earth." This was the motto of the first Goodwill Games, held in Moscow July 4-20. The participants, more than 3,000 athletes representing 80 countries on five continents, competed in 18 different sports and set six world, eight continental and 91 national records. The Games were attended by 800,000 sports fans. Track and field events were the most popular, drawing crowds of 160,000. More than 1.5 billion people watched the Games on television.

GOODWILL GAMES

By Vladimir Belyakov



Soviet dignitaries presided at the opening ceremonies for the first Goodwill Games in July. Thousands of people watched the Games in Moscow's Olympic Stadium on Lenin Hills.

At the opening of the Goodwill Games, Mikhail Gorbachev said: "I want to note with satisfaction that the Games were made possible by the joint efforts of sports organizations, business circles and ordinary citizens of the Soviet Union and the United States. They decided to put an end to the abnormal situation that has prevented Soviet and American athletes from competing in major international events for 10 years."

Sports fans in the USSR and in the United States greatly regretted that the athletes of their countries did not compete against each other in the last two Olympic Games (in Moscow in 1980 and in Los Angeles in 1984). Because of this, the Olympic Games were spoiled. The athletes of the two nations with the strongest records in sports did not have the opportunity to pit themselves against each other head to head, a loss for the athletes themselves, for the fans and for sports in general.

During a TV linkup on August 6, 1985, Soviet and American athletes suggested arranging what they called "Goodwill Games," to be held in the USSR in 1986 and in the United States in 1990. The proposal made by the Soviet and American athletes won the support of athletes in many

countries. Coincidentally, the first Goodwill Games were held in the year that the United Nations declared the International Year of Peace.

Contribution to Peace

People were correct in expecting the Games to contribute to the development of international understanding and confidence and to relations between the Soviet and the American people as well.

"The holding of the Games reflects a healthy trend in the development of relations between

our two peoples despite increasing tension at official government levels," said Georgi Arbatov, director of the Institute of U.S. and Canada Studies. "This trend lives. It is even gaining momentum in some sections of American society. Many Americans are also speaking out for the elimination of artificial obstacles to communication among people. That makes me hope that the Games will contribute to clearing the atmosphere internationally and normalizing the political climate.

"The Games will be a most desirable contribution because there has been no lack of bad politi- ▶

The opening ceremony of the first Goodwill Games in Moscow on July 4 clearly gave the message, "Welcome to the USSR!"

Right: Marat Gramov (left), chairman of the Goodwill Games Organizing Committee, and Ted Turner, a sponsor of the Games, at a news conference. Below left: The flag of the Games in the opening procession. Facing page, top: The Games' opening ceremony. Bottom, left to right: Evelyn Ashford, USA, won the women's 100 meters. Soviet and Czech women's basketball teams vie in Moscow's Lenin Central Stadium. Vladimir Salnikov, USSR, improved his previous world 800-meter freestyle record.



Good-will "Linkup"

American astronaut Thomas Stafford commanded the Apollo spacecraft that linked up with the Soyuz spacecraft piloted by Alexei Leonov on July 15, 1975. Stafford was a guest of honor at the opening ceremonies of the Goodwill Games in Moscow. The brilliant accomplishment of the Soviet-American space experiment was sealed with a strong handshake. Eleven years later the commanders of the two spacecraft shook each other's hands once again in Moscow's Olympic Stadium.

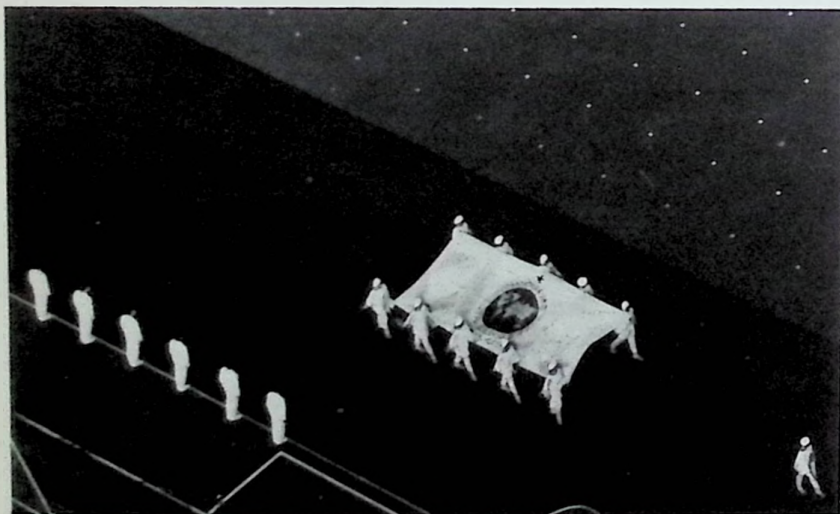
Recalling those days, Stafford said that for hundreds of millions of Americans, Soviet citizens and people throughout the world, the flight was not simply a linkup of two spaceships, but a union of nations. The linkup expressed their readiness to make the world a better place to live in, to develop science and to explore space. He expressed his belief that the Goodwill Games were a fine opportunity to improve relations between nations, including the United States and the Soviet Union. Our two countries should compete in sports, and this would lead to better understanding. The Goodwill Games in Moscow can be considered a linkup of good will among nations, he said.

The motto of the Games, "From friendship in sports to peace on Earth," reflects their spirit. The desire for peace, friendship and better understanding, for building confidence among nations, unites the strongest athletes on the planet. They came together to measure their strength in honest competition and to reiterate their solidarity with the principles declared in the Olympics Charter—that is, to promote a better and more peaceful world.

The flame of the Goodwill Games burned for 16 days in the sky over Moscow. During that time 346 sets of prizes were awarded to the best athletes. Special prizes awarded by SOVIET LIFE magazine were won by American runner Jackie Joyner, who set a new world record in the septathlon (7,148 points); Soviet pole vaulter Sergei Bubka, who broke his own previous world record when he cleared 19 feet 8¾ inches; Soviet gymnast Yelena Shushunova; and American boxer Anthony Johnson.

Moscow passed the symbolic baton to Seattle, Washington, where the second Goodwill Games are to take place in 1990. The executive director of the organizing committee for the next Games, Robert Walsh, assured us that the Americans will do their utmost to have the Games in Seattle take place in the same spirit of friendship as the Moscow Games.

[More on the Games in our December issue.]



cal news recently, while good news has been regrettably scarce.

"Though one swallow does not make a summer, and one event does not change the entire situation, every good initiative awakens hope and paves the way for other good efforts. In this respect, the Goodwill Games are such an initiative.

"When the international situation becomes troubled, people feel it everywhere. Americans are no exception. My colleagues and I credit the energetic efforts of many well-known Americans for improving conditions by working toward limiting and reducing armaments and increasing mutual understanding.

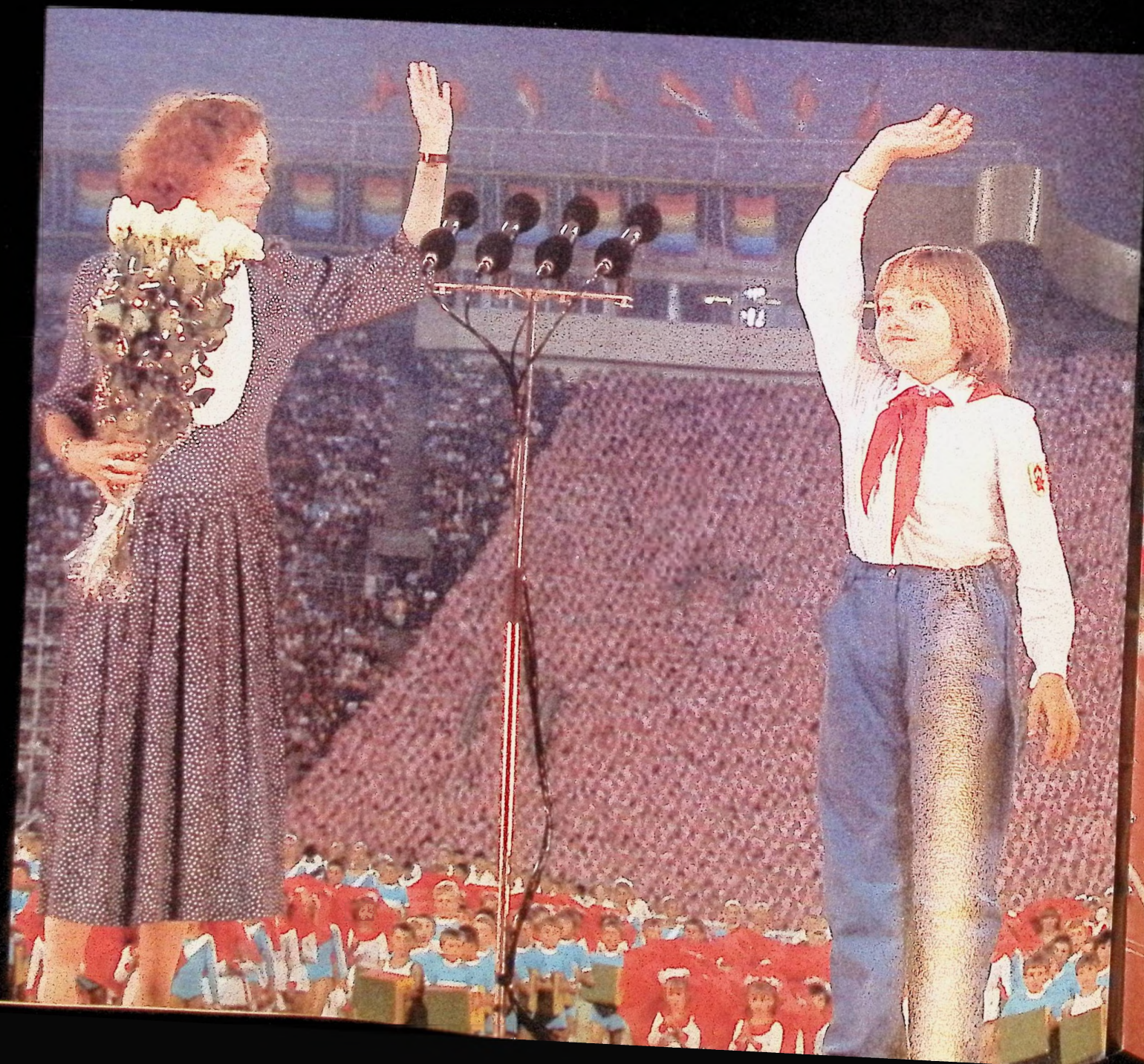
"I have no doubt that the Games will prove very popular, attracting the attention of millions of American and Soviet people as well as sports fans in other countries. But the burden of im-

proving relations between the two powers should not be foisted on the shoulders—though they are undoubtedly very strong—of the athletes. Things will not change without the active and persistent efforts of all political figures and the public.

"It is obvious to all that Soviet-American relations are not at their best. The Goodwill Games are very important under the circumstances. They can make a modest but useful contribution to the cause of peace because sports—like cultural relations, tourism and other relations among people—have always helped to promote understanding. They have brought people around from artificially fomented feelings and passions to common sense. They have made people realize that the people on the other side are people just like themselves and that there are no forces on Earth to prevent them from living in peace."



On July 17, 1975, Thomas Stafford and Alexei Leonov, commanders of the Apollo and Soyuz spacecraft, docked their vehicles and shook hands in space. On July 4, 1986, they again shook hands at the opening ceremonies of the Goodwill Games in Moscow's Olympic Stadium.



Left: Jane Smith and Katya Lycheva at the opening ceremony. Jane Smith is the mother of the late Samantha Smith, the young American girl who was invited to visit the USSR by Yuri Andropov. Carrying on Samantha's good-will spirit, Soviet schoolgirl Katya Lycheva toured the United States earlier this year.



A group of fans from the States cheers on its athletes. Left: The 96 runners who began the marathon were joined by joggers carrying Soviet and American flags. Right: Thomas Stafford, Alexei Leonov and Valeri Kubasov, participants in the Soviet-American space linkup in 1975, were guests of honor at the Games.



TOMORROW



As humanity enters the twenty-first century—a new millennium—there are still many unresolved problems. The question is whether the world will be able to deal with the most urgent problem—that of preserving life on the beautiful planet Earth, our common home. We are optimistic and look forward to the next century. However, merely the absence of war is not enough. There must be a new state of affairs in the world with truth, justice and good-neighborly relations triumphing over mistrust and military force. International cooperation and exchange in science, technology and culture would benefit countries around the world. That's our idea of a happy tomorrow.

In their quest to find alternatives to the well-traveled wheel, transportation engineers have to come up with bold and imaginative projects. But ideas that once seemed fantastic soon become a matter of routine engineering. One case in point is the magnetic levitation (maglev) car developed at the USSR Research Institute of Transport Development in Moscow. An entirely new transport design, the Soviet maglev car has already logged its first meters on a test run. The prototype at the test track in Ramenskoye, outside Moscow, is an advanced model. The original looked very much like a subway car and operated on fixed magnets, while this model operates on electromagnets and is based on an attraction system rather than a repulsion system. The car is propelled horizontally by an electromagnetic field. Scientists at the institute have already developed, assembled and installed the sophisticated mechanical and electronic systems in the maglev car, and an experimental prototype is ready for its first run along a 600-meter test route. The more complex task lying ahead is to build an industrial model of the car. During the current five-year plan period (1986-1990), experimental testing of the car is to begin in Armenia.

Courtesy of the journal NTR:
Problemy i resheniya



MAGLEV CAR READY TO GO

WHAT DOES THE FUTURE HAVE IN STORE?

Alexander Kazantsev, 80, the dean of Soviet science fiction, gives a view of the twenty-first century.

It's wrong to think of science-fiction writers as prophets. It's just interesting to think about tomorrow. Progressive science fiction doesn't prophesy; it merely analyzes scientific, technological and social trends and makes projections into the future in an artistic way with some degree of approximation.

The technocratic twentieth century has produced new discoveries, but it has also shelved many humanitarian achievements of the nineteenth century to the detriment of world morality. I hope the next century will make its scientific strides without leaving ethics aside. Science and morality must go hand in hand.

I believe people of the twenty-first century will stop squandering oil, coal and energy resources. Demand keeps growing, that's true, but when the subterranean

treasure-trove runs out, then what?

Obtaining liquid hydrogen fuel using solar energy is a wonderful idea, and our descendants will explore that possibility, I'm sure.

The next century will have to feed the hungry—a formidable task of today. If we consider the burgeoning world population, it's easy to see the predicament that we'll soon find ourselves in. At least 1.8 billion people suffer from malnutrition, the statistics say. And according to UN data, several hundred million people are on the verge of starvation.

But experts claim the Earth can feed hundreds of billions—I repeat, hundreds of billions!—of people on microbiologically produced proteins.

Alexander Nesmeyanov, a brilliant scientist, suggests that food-stuffs can be mass-produced from natural protein without cultivating

cereals and killing animals—quite a practical idea, however far-fetched it may seem.

In 1946 a unicellular yeast similar to *Candida* fungi ate the asphalt off an Algerian highway. The microbes are fantastically voracious and breed rapidly in heavy oil refuse—a fungus colony increases a thousandfold within a 24-hour period. Proteins account for 90 per cent of the weight of a fungus colony, compared to 10 per cent of the weight of meat, and much less space is needed to produce the colony.

I spent hours in Nesmeyanov's biochemical laboratory and tasted the artificial food being produced. The result was my novel *Hope Cupola*. I wrote it to express my faith in the wisdom of people working to save humanity from hunger and privation. The book is dedicated to Nesmeyanov.



Advantages of the new train—high speed (over 200 km. per hour) and no noise or exhaust pollution. Right: The interior of a maglev car.



Electric commuter trains are the main mode of transport into the city from the suburbs, but they aren't convenient for people living an hour and a half away. The future maglev train will cover the same distance in 30 minutes and offer greater passenger comfort.

By Yevgeni Minin

Preserving our flora and fauna is a top-priority issue for the near future. The pollution generated by our technological civilization is destroying the environment. This is alarming. We are destroying the Earth, our home, without giving a thought to the condition it will be in for our children. I hope by the third millennium people will realize that they are one with nature, and they must preserve it.

Peace must also be preserved. It's common knowledge that there will be no victors in a nuclear war. Western futurists predict that humanity is rushing toward self-destruction. A convinced optimist, I think there's still hope for a better world, though our technological potential has reached a dangerous level and has given us the capability of killing every living thing on Earth in a matter of a few minutes. Our civilization is suffering from

growing pains, with technology outstripping morality.

Nuclear warfare is inadmissible. Anyone anxious to unleash it is a suicidal maniac. I strongly hope that there is an end to the nuclear threat even in this century.

When we talk about the future, we're usually referring to the economy, not to individual and social morality. A well-informed person, not a highly moral one, is what education aspires to today. We often think it's more important to stress knowledge and good study habits than sound moral values. Parents by themselves can't cope with upbringing; society, too, must play a role in it.

It's now high time to set up the school of tomorrow, where children will learn through doing. We must also recognize teaching as the most important job of all.

Sooner or later all science-fic-

tion writers return to the topic of extraterrestrial life. We anticipate an encounter, though some scientists doubt there's anybody out there. However we take it for granted, even without factual proof. But there are facts—whether we acknowledge them or not. To become aware of such facts, we have to adopt a thoroughly new point of view, one that allows us to see our earthly developments in the context of universal reason and its evolution. I hope we'll meet our brothers from other stellar systems in the next century.

Our planet is like a spaceship crossing the universe—a spaceship with separate modules in which the crew of one can't stand the crew of the other. It's a picture as hateful as it is ridiculous. We must remove the partitions separating the modules and reeducate

our crews, that is, humanity, in a spirit of friendly unity and mutual understanding.

Back in 1939, I was working with a team of engineers preparing the Soviet exhibition for the New York World's Fair. The fair's motto was "The World of Tomorrow." It was then that I conceived the idea for my sci-fi novel *Arctic Bridge* about Soviet-American friendship as expressed by a floating tunnel connecting the two countries, via the North Pole, under the icy waters of the Arctic Ocean. It was the same year as the daring flights of Soviet pilots Valeri Chkalov and Mikhail Gromov across the North Pole to the U.S. So, the fantastic idea had a tangible basis in fact.

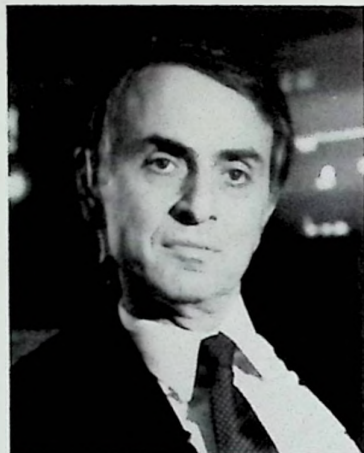
Here's what I think today: Nations that share a planet also share interests. To live in peace and to be friends, bridges, both real and metaphorical, are needed.

WHAT ABOUT A JOINT FLIGHT TO MARS?

A manned flight to Mars! Sounds fantastic? It's quite possible, say scientists Carl Sagan and Roald Sagdeyev. A joint Soviet-American venture would be good for science and for relations between the two countries. Ordinary people, too, find the idea attractive and challenging. That was the message a group of Maine students carried to Moscow.



Academician
Roald Sagdeyev.



American scientist
Carl Sagan.

Carl Sagan, the prominent American astronomer, maintains that a joint Soviet-American expedition to Mars would not only serve the interests of science but also expand and consolidate peaceful cooperation between the Soviet Union and the United States. Its success would fire the imagination of all people in the world and lay the foundation for continued human progress—ultimately, establishing settlements on another planet. It would also provide a better understanding of the past and future of both that planet and the Earth, he says.

The journey by Earthmen to Mars would mark a major step in our becoming an interplanetary civilization—a step of historic significance. By putting the achievements in aerospace and nuclear technology, electronics and rocketry at the service of peace, a Soviet-American space expedition would pave the way for joint programs on Earth.

A manned space flight to Mars is technically feasible, claims the American astronomer, although it may prove costly.

Commenting on the American astronomer's sweeping project, Academician Roald Sagdeyev, director of the Institute of Space Research of the USSR, mentioned that Carl Sagan is well known to Soviet scientists, not only as an

eminent planetologist, but also as a prominent public figure who is concerned with the development of human society, the unpredictable consequences of a nuclear disaster and the risks of an arms race in space.

As an alternative to a program of military rivalry in space, Sagdeyev said that Sagan has set forth a program of peaceful cooperation, of pooling everybody's efforts to solve the important problems facing humanity.

Referring to last year's drought in Africa, which brought home forcefully that humans are sometimes powerless in the face of the unharnessed forces of nature, the Soviet scientist noted that appropriate space programs will not, for example, help increase crop yields immediately, but the programs may provide a way of studying the global climate and understanding the mechanisms by which we will be able to control the weather at any point on the globe.

Other projects of a similar scale could also be mentioned, he said. But one thing is clear—the global nature of these problems necessitates that all nations participate in solving them. Broad international cooperation will expand the use of space for peaceful purposes.

Quoting the prediction of Konstantin Tsiolkovsky, the great Russian scientist and father of rocketry, that humans will not remain on Earth forever, but they will first

penetrate beyond the atmosphere timidly and then win for themselves all near-Sun space, Sagdeyev pointed to the six planets in the solar system that have already been viewed in some detail by spacecraft. Venus no longer is a secret, and such giant planets as Jupiter, Saturn and, recently, Uranus, are no longer mysteries. But Mars holds a special place in the human mind. While Venus is the Earth's double only in size—their conditions are quite dissimilar—Mars has always been for people a place where life might exist outside Earth, or might once have existed. To confirm or finally to repudiate this attractive theory, Sagdeyev believes, one Viking program is not enough. Mars needs a detailed study of its surface and subsurface.

The tentative plans for a Mars expedition suggested by Sagan

are interesting, but manned expeditions to Mars are not projects for today or even tomorrow. Before man can fly there, much work must be done by unmanned flights, Sagdeyev said.

The Soviet experience in organizing projects to study distant space shows that such an ambitious undertaking as an expedition to Mars would be impossible without international cooperation. With the international Vega—Halley's Comet—Project successfully completed, the USSR has another project in the pipeline, one that will study remote space objects—Project Phobos. Scheduled for 1988-1989, the project will explore Mars and its satellite Phobos, the Sun and interplanetary space. Preparatory work on the project is being done by scientists and specialists from 11 countries and the European Space Agency. ■

AN IMPORTANT CONTRIBUTION TO GOOD RELATIONS

By Alexander Shevelyov

Voices of people speaking English could be heard in the huge Cosmos Pavilion of the USSR Exhibition of Economic Achievements, where the history of Soviet space technology is displayed.

"I'm only nine," said Dallas Brenian, a Maine schoolgirl, addressing a gathering in the pavilion, "and I don't remember the Soyuz-Apollo flight of July 1975. But I know about it. So it is possible for our two countries to cooperate in outer space. Why not explore Mars together? You can't just pocket information for your own use—knowledge should be shared. If we can bring the efforts of our two great countries together and set up a Soviet-American team to go to Mars, the whole world, all people, will gain by it."

The American students were in Moscow to deliver a message from the people of the state of Maine calling for peace in space and for further U.S.-Soviet efforts in space exploration, especially a joint expedition to Mars.

One of the leaders of the U.S. delegation, history teacher William Fortschen, who was Maine's candidate for the fatal Challenger mission, told the gathering about his meeting with Yevgeni Yevtushenko, the distinguished Soviet poet, not long after the tragedy occurred. Yevtushenko brought with him a poem which he had written to commemorate the dead. In it he wrote that the names of the seven U.S. astronauts will be entered in the same book of space flight pioneers as the four Soviet cosmonauts who died in an accident several years ago.

"Our two countries," said

Fortschen, "can mourn together and triumph together. The state legislature of Maine has passed a resolution calling for a joint American-Soviet space mission to Mars and has submitted it to the U.S. Senate. I'm sure that such a flight will be possible in the future."

The American students presented Soviet cosmonauts Alexei Leonov, the first man to walk in space, and Georgi Grechko with a flag of the state and T-shirts printed with the slogan "To Mars Together!" in both Russian and English.

"Will you take our souvenirs to Mars?" they asked the cosmonauts.

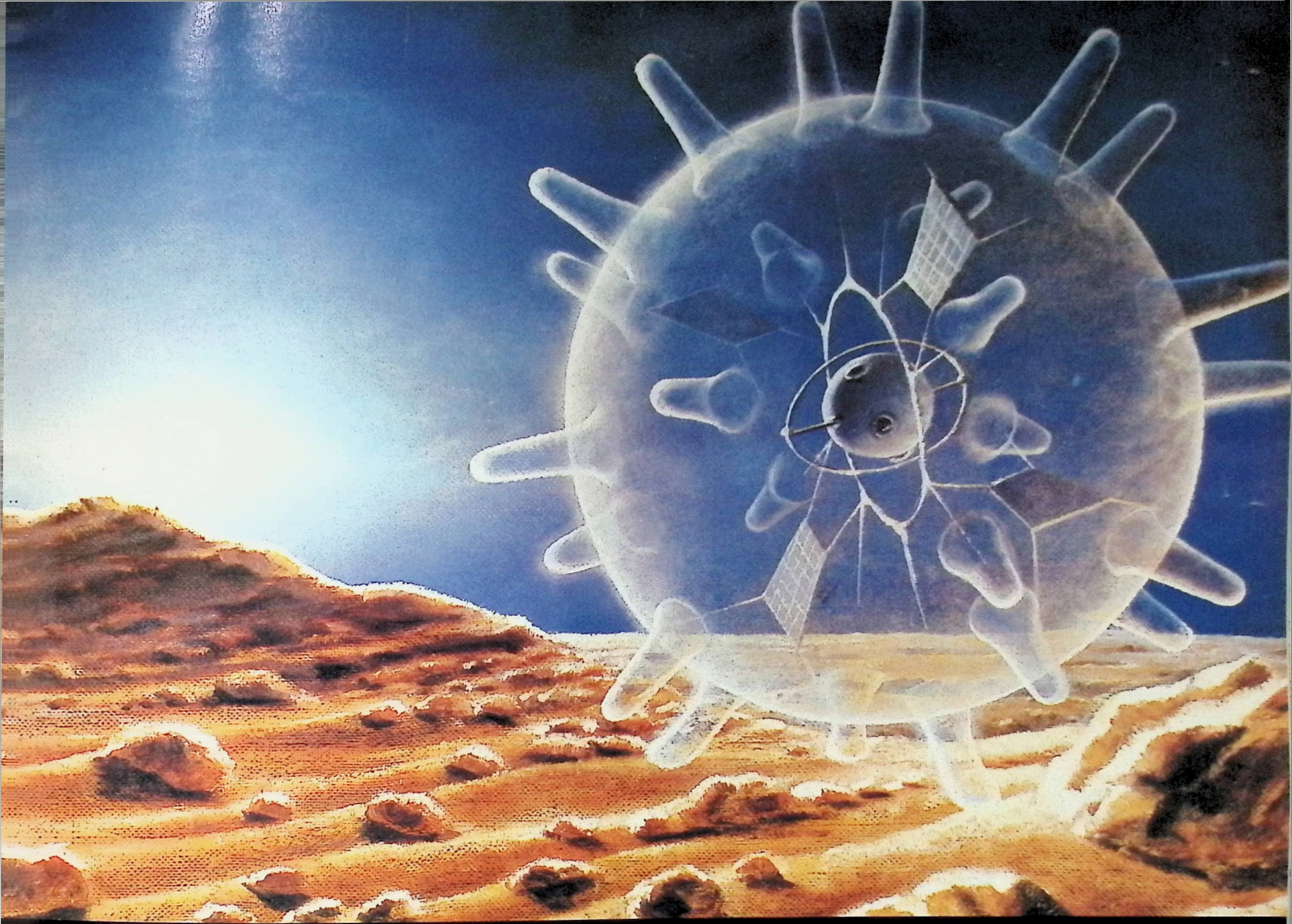
"Sure," Grechko said smiling. "If you continue with what you're doing now, they'll certainly find their way to Mars."

"I was lucky to be the leader of the Soviet crew for the Soyuz-Apollo mission," added Leonov. "Our docking proved to all people on Earth that citizens of the two countries can live and work in space side by side."

American astronaut Russell Schweickart, who was in Moscow for talks on U.S.-Soviet space cooperation, said the Soyuz-Apollo project was brilliant but too short. The most attractive feature of the Maine proposal is that it involves long-term cooperation.

Academician Vladimir Kotelnikov, vice president of the USSR Academy of Sciences, was the last to speak. He thanked the young Americans for their message, which would make an important contribution to good relations between the two countries.

"Cooperation in outer space is a continuation of our cooperation on Earth. It's wonderful that children understand that," he said. ■



A group of Maine schoolchildren with Soviet cosmonauts Alexei Leonov (left) and Georgi Grechko (right) and American astronaut Russell Schweikart at a meeting in the USSR Exhibition of Economic Achievements in Moscow. Above: Andrei Sokolov's space fantasy titled *Morning on Planet Mars*.

Photograph by Alexander Mokletsov





A HOME FOR EVERYBODY

Children come up with the most amazing ideas. That's what they think at the Children's Studio attached to the USSR Architects Union. Its purpose is to encourage spontaneity and provide a background in art.



SOCIAL AIMS OF SOCIETY

By Natalya Rimashevskaya

Doctor of Economics, Central Economic and Mathematical Institute
USSR Academy of Sciences

Further improvement in the material well-being and standard of living of all sections of the population is the main economic goal set forth by the Twenty-seventh Congress of the Communist Party of the Soviet Union. Achieving this goal will necessitate a greater social orientation of the economy, with emphasis on changes in labor.

The social aims of society are not confined to ensuring material comfort alone, although that is assumed to be an indispensable condition. Society aims to provide for the harmonious development of the individual, encompassing the entire spectrum of human existence. Our task is to raise the people's welfare to a qualitatively new level and to ensure such material, social and cultural values as would best contribute to the spiritual growth of the individual and the application of his or her abilities and talents.

The attainment of these aims will be made possible by growth of the gross social product, of national income and of the consumption fund. In accordance with the acceleration concept, whose goal is to make our progress more dynamic, rates of growth in national income will increase from about three per cent in 1981-1985 to almost four per cent in 1986-1990 and to five per cent and more toward the end of the century.

In the next 15 years, we plan to double the resources used for improving our living standards. This is the goal of the social program adopted at the Twenty-seventh CPSU Congress.

The program provides for improving working conditions and remuneration, increasing the consumption fund, giving more assistance to large families, reviewing pension arrangements and retail prices, improving housing conditions and health services, and further developing education, culture, art and the mass media.

The socialist economy precludes the possibility of unemployment. At the same time, society confronts very serious tasks—qualitative transformations in labor and all-around development of the creative aspect of labor. The newest technologies will free people from monotonous and arduous physical labor and advance the campaign against industrial accidents and occupational diseases. The share of manual labor in the production sphere is to be reduced to 15 to 20 per cent in the current five-year plan period (1986-1990).

The main aim of the constitutional right to work is to ensure for all able-bodied citizens the possibility to work in their chosen fields of activity according to calling, ability, education and professional training.

Today social status, material conditions, improvement of qualifications and working career depend in many ways on the abilities and industriousness of each person, on his aspirations and activity. The economic basis of this justice is to be found in the socialist principle of distribution. According to this principle, the bulk of the gross social product, which is subject to consumption, is distributed among those who created it in proportion to the quantity and quality of their work. Factors regulating distribution include not only the level of qualification, but also the difficulty of the job, the physical and mental strain, complexity, responsibility and health hazards associated with it. The significance of the work for the national economy also matters, as do the living conditions associated with the job. It is one thing to work in Moscow or Leningrad and quite another to work in remote communities of the Far North, where earnings are naturally higher.

Wage differentials will diminish as the influence of these factors diminishes—for example, following advances in technology.

In the current five-year plan period, the average wages of industrial and office workers will increase by 15 per cent. The remuneration of collective farmers' labor will increase by 18 per cent, and their real incomes will become practically the same as those of workers and employees.

But wages will be growing at different rates. Workers engaged in all branches of material production will receive a pay raise of 25 to 30 per cent. A major new step will be taken in raising the wages of those engaged in the nonproduction sphere. The salaries of teachers and other workers in public education will rise this year, and a stage-by-stage increase in wages in the health services will also begin this year. Future plans envisage pay raises for personnel in cultural and educational institutions and in higher and technical secondary schools.

Wages account for only 69.8 per cent of the total income of industrial and office workers' families. The remainder of their income comes mainly from the consumption fund in the form of pensions, stipends, allowances and other benefits and payments. With this fund, the state financially supports disabled members of families—the elderly and invalids—and partly supports children under school age and pupils. In the current five-year plan period, payments and benefits from the consumption fund will be doubled.

The average life expectancy in the USSR today is 70 years. Senior citizens constitute 16 per cent of the total population, and by the beginning ▶



Three views of the city of tomorrow. The artworks were done by children.



THESE FUNNY headdresses and imaginative designs for cities of the future were created by members of the Children's Studio at the Central Architects Club in Moscow.

Unlike a regular art school, you don't have to pass exams to join the Children's Studio. Membership is open to all boys and girls who want to belong.

The children work with ball-point and felt tip pens, water colors, collage, gouache, appliqué on fabric, plasticine and clay. For a special project titled "A Home for Everybody," the six-, seven- and eight-year-old artists chose to work in clay. They came up with a house occupied by their favorite fairy-tale characters. It's a home filled with harmony, a place where everybody gets along. There's even a smiling teddy bear to welcome guests at the door.

Older children designed a tree house, a house with wings and even a "Home Sweet Home" made of candy and fruit.

Adults, both artists and architects, take the children's imaginative creations quite seriously: The Moscow Institute of Architecture and the USSR Architects Union have awarded certificates of honor to many of the children's works. Projects designed at the studio have also won prizes at a number of international contests. ■

Facing page: Fancy headdresses created by youngsters at the Children's Studio.

of the next century, their number will increase to 25 per cent. That naturally means society will have to pay more attention to maintaining older people and their health, to providing them with opportunities to work as their strength allows (that is, if they wish to).

The Soviet Union has a broad system of social welfare benefits as well as different types of pensions: old-age and disability pensions, pensions for the loss of a breadwinner, and others. Practically all people who have reached a certain age (women 55 years and men 60 years) are entitled to a pension whose size is determined by their wages and the length of their employment. Other, privileged pensions (for those who worked in arduous or hazardous jobs, for instance) are higher and the pensionable age is lower—not 60 years, but 55 (for men).

The law on pensions has been considerably amended since 1956 when it was adopted. More people are now eligible for pensions, and the minimum pension is greater. Yet the existing pension system undoubtedly needs improvement—for example, concerning pension size.

An important question involves pensioners who want to work: Participation in social production is not only financially but also socially valuable for senior citizens.

State aid to families in bringing up children begins with the birth of a baby and ends when the young person begins independent life. A family receives a grant upon the birth of every child. Additional grants go to the mothers of large families and to unmarried mothers. Families with relatively low incomes receive special child allowances.

Public education serves all children. Nursery schools catered to 16.1 million children in 1985. General schools have extended-day programs, which in 1985 served 37 per cent of the pupils in the first to eighth grades. There are also children's health resorts; Young Pioneer, work and sports camps; Young Pioneer centers; and centers and stations for scientific, technical and artistic pursuits.

A program is under way to improve state aid to families during the current five-year plan period and for the period ending in 2000. It includes measures to increase the amount of grants and to extend the range of families entitled to grants.

The number of working women today has in practice reached its ceiling. Women who do not work or study are those who have for a time interrupted their careers after the birth of a child and those who are mothers of large families.

Women, however, continue to take part in social production: The prestige of the working woman is greater than that of the homemaker. In produc-

tion, women enjoy social recognition, and the growth of qualification and professional standards forms the basis for self-expression and self-assertion. Women link their plans in life largely with work and studies. Like men, they seek to have a share in the development of society. Contributing factors are their high educational standards and leading position in a number of industries. In 1985, for example, 665 of every 1,000 women had a secondary or higher education. More than 40 per cent of scientific workers were women. Women also dominate the health services, public education and culture.

The state shows great care for mothers. At present, paid leave to look after a baby is limited to one year, but in the future it will be increased to three years. Within the maximum period of leave allowed by the law, a mother can choose the length of leave that she thinks is necessary for her and then return to her old job. Plans are under way to offer women options such as flexible hours, a partial working day or working at home.

The USSR Constitution guarantees every citizen the right to housing. It is ensured first of all by the available state housing stock, which now accounts for about 60 per cent of all housing. Apartments from this stock are provided free of charge. Rent and communal charges paid by the population constitute less than one-third of what the state spends to maintain the housing and to provide the utilities.

State-constructed housing is supplemented by housing built by cooperatives. In the last five-year plan period, cooperative-built housing accounted for some six per cent of new construction. Individual citizens and members of building cooperatives may receive state bank credits for 10 to 20 years at 0.5 per cent interest a year.

The Twelfth Five-Year Plan calls for building 595 million square meters of floor space and in the succeeding 10 years, before the year 2000, no less than two billion square meters. This is a good basis for solving the most important problems—providing every family with a separate apartment or a house (at present, 80 per cent of all town dwellers live in such conditions). Special attention will be paid to the quality and comfort of housing.

We are all particular about our health. Society is not indifferent to the way we feel, especially with regard to the kind of requirements and problems facing workers in conditions of the scientific and technological revolution and the dynamic growth of the productive forces.

This is why such great importance is attached to developing the health services; expanding health facilities—providing more outpatient clinics and polyclinics, hospitals and sanatoriums—raising the quality of services; improving medical training; and developing medical science and technology. ■

30 YEARS:

Continued from page 15

discussions on SALT III. According to spokesmen for the two delegations, SALT III will envisage a drastic reduction in all nuclear weapons, both strategic and tactical.

After the formal signing of the documents, which took five minutes, the two leaders made a short speech. Then something unexpected happened: Millions of TV viewers saw Jimmy Carter suddenly hug Leonid Brezhnev.

After serious consideration of the document that was signed, you could clearly say that a great and important development occurred in Vienna in those days. Though Soviet-American relations continued to grow more and more complicated, a treaty envisaging the limitation and even a certain reduction of nuclear weapons had been signed.

However, SALT II was not ratified by the U.S. Congress, and all the agreements attached to it were not adhered to. All talks were frustrated. Ideas on securing peace by force and on putting optimum pressure on the Soviet Union were voiced. It was pressure like that that brought nearly all of the cultural, scientific and economic relations between the two countries to a standstill.

Unilateral Moves

Regardless of the situation existing between the Soviet Union and the United States, the USSR persevered in its efforts to curb

the arms race. On several occasions it even risked taking unilateral measures in this respect. As early as 1982 the Soviet Union made the unilateral commitment not to be the first to use nuclear weapons. In 1983 it declared a unilateral moratorium on not being the first to launch antisatellite weapons in outer space, and in April 1985 it declared a moratorium on the deployment of medium-range missiles in Europe and suspended the measures it had taken in response to the deployment of Pershing II and cruise missiles in Europe. In July 1985 the USSR decided to stop all nuclear explosions as of August 6, and it called on the USA to follow its example.

The Soviet Union was well-prepared for the summit held in Geneva from November 19 to November 21, 1985. The documents that came out of those talks are well known.

The Politburo of the Central Committee of the Communist Party of the Soviet Union assessed the summit as follows: "... The Geneva conference was a major international political event. The summit's main achievement is that the Soviet and American leaders have stated in their Joint Statement that 'a nuclear war... must never be fought.' They emphasized the importance of preventing any war between them, whether nuclear or conventional. They made the commitment never to seek to achieve military superiority. This means that the results of the Geneva talks will have a

positive effect on the present political and psychological climate in the world and will help to improve international relations as well as to reduce the threat of nuclear war. The summit has laid the foundation for a dialogue with the objective of promoting a change for the better both in Soviet-American relations and in the world at large."

Learning the Great Art Of Living Together

The Soviet Union continued its efforts for peace. On January 15, 1986, a statement by the General Secretary of the Central Committee of the CPSU, Mikhail Gorbachev, was published and immediately became known to people around the world. The statement contained a package of new Soviet peace proposals with a program for the complete elimination of nuclear weapons on the globe by the year 2000. This large-scale program was the logical continuation of the Soviet idea put forward at the Geneva summit. "The time had come to learn the great art of living together in the face of the nuclear danger that hangs over all of us. This is something that our Soviet people—and, I am utterly convinced, the American people as well—have a stake in. This is something that involves all of the peoples in the world."

The Twenty-seventh CPSU Congress, held in February and March 1986, outlined a broad program of measures to ensure universal security. When predicting how international relations will develop for

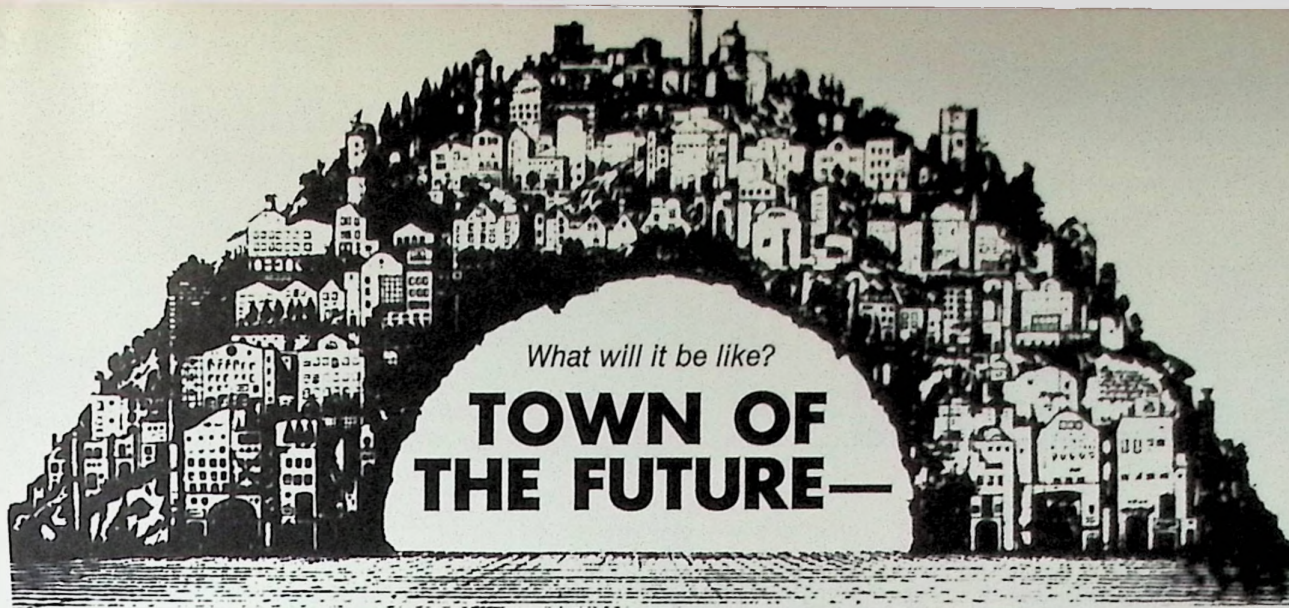
the rest of the century, we assume that the very nature of modern weaponry deprives every nation of the hope of protecting itself by military technology. In this day and age security can be ensured only by political means. To do so, it is necessary to be determined to follow the path of disarmament.

The ultimate wisdom lies not in taking care of oneself and nobody else. The essential point is that everyone should feel equally secure. The fears and worries of the nuclear age breed unpredictability in politics and in concrete actions.

This concept, which was outlined in the Political Report of the CPSU Central Committee to the Twenty-seventh CPSU Congress, was unanimously approved and adopted by the delegates, and it enjoyed nationwide support.

What's next? Well, according to the Political Report: "... It is not easy, in the current circumstances, to predict the future of relations between the socialist and the capitalist countries, the USSR and the USA. The decisive factors here will be the correlation of forces on the world scene, the growth and activity of the peace potential and its ability to effectively repulse the threat of nuclear war. Much will also depend on the degree of realism that Western ruling circles will show in assessing the situation. ...

"With nuclear war being totally unacceptable, peaceful coexistence rather than confrontation should be the rule in relations between countries belonging to the two different systems." ■

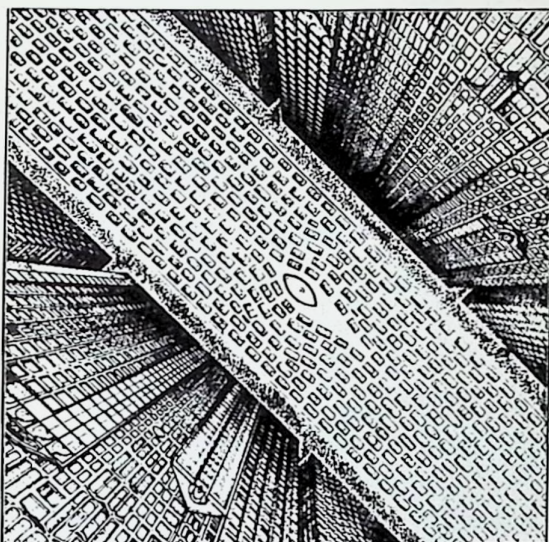


What will it be like?

TOWN OF THE FUTURE—

PEACEVILLE

By Marina Stulova



IT HAS LONG BEEN the custom to mark a major historical event by erecting a monument. I suggest that we commemorate the start of the new millennium by designing and building a youth town to symbolize the 2,000 years of our civilization. We could name the town Peaceville." This is what Rustem Khairov, a young philosopher from Moscow, wrote in a letter to *Komsomolskaya pravda*, a popular Soviet youth daily.

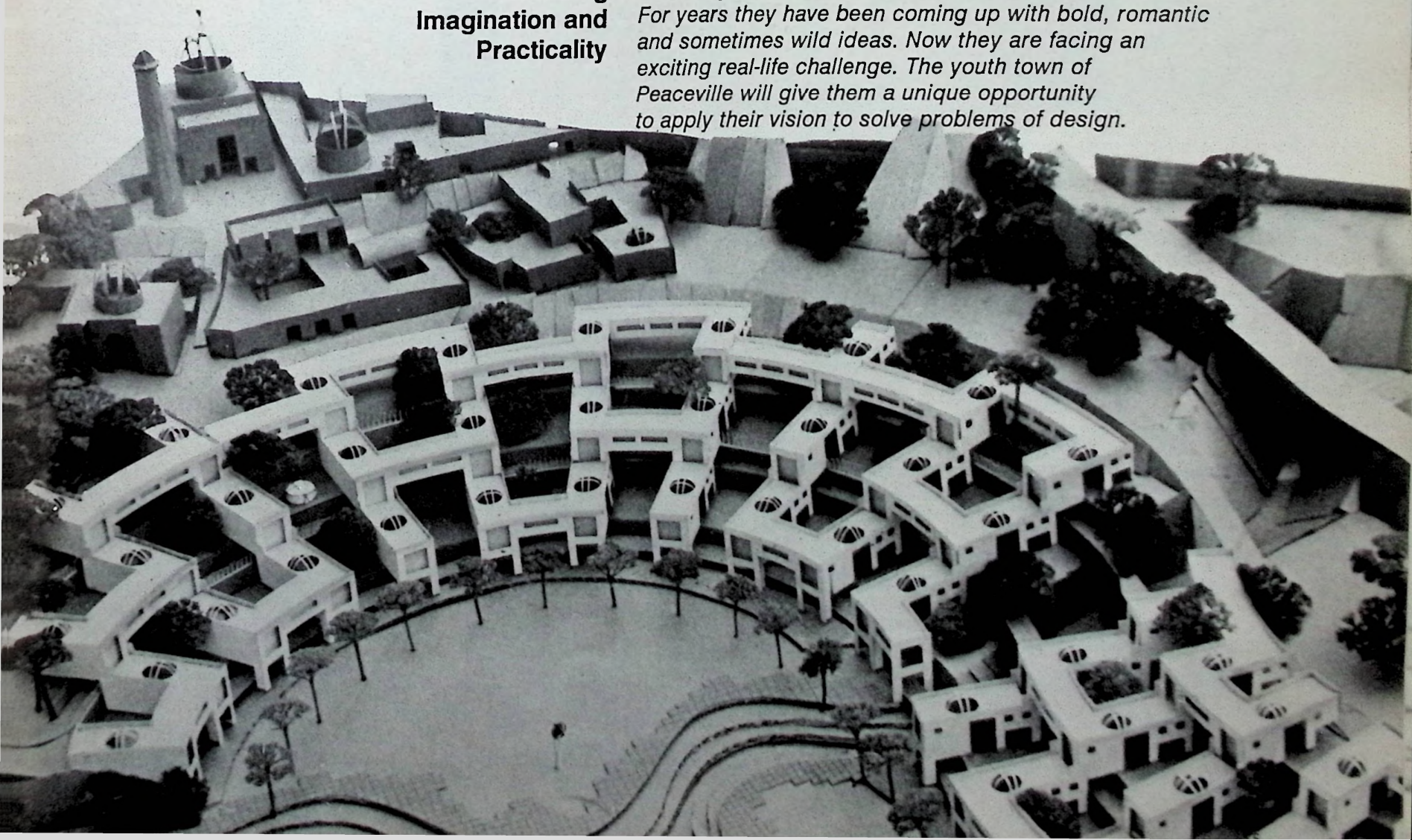
Rustem's letter sparked the imagination of young people throughout the country. Letters and telegrams began pouring into the paper's editorial offices.

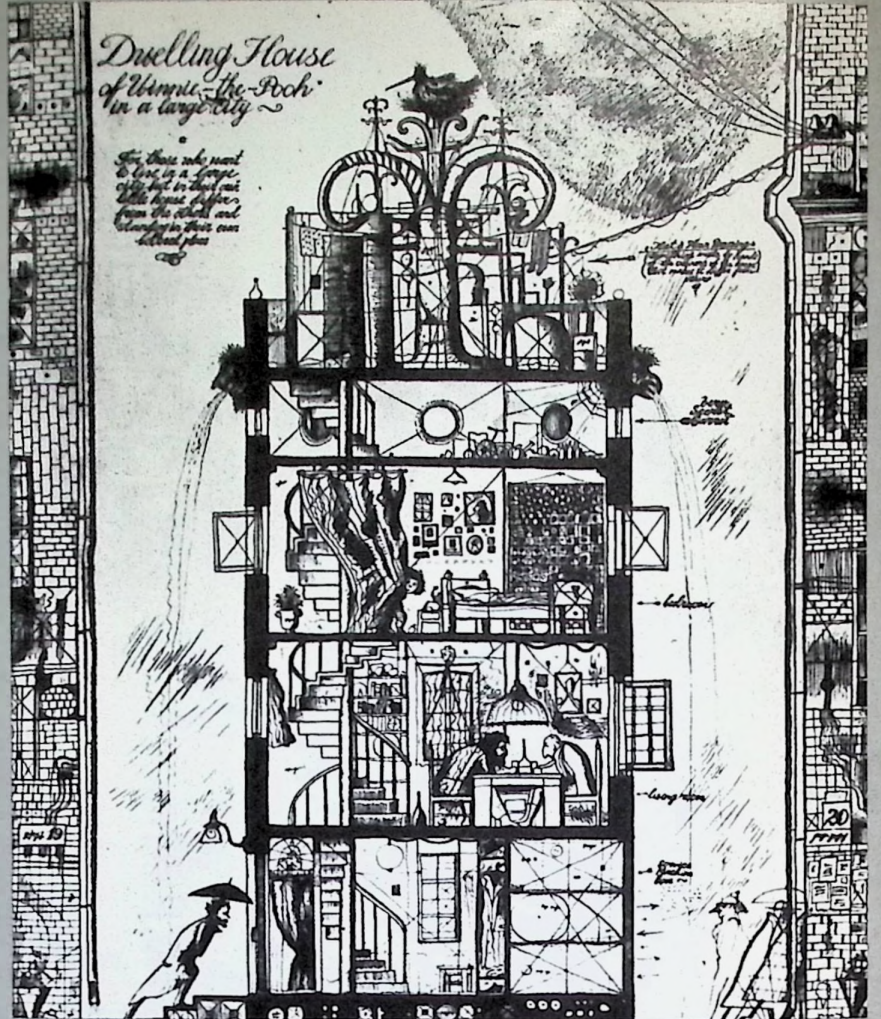
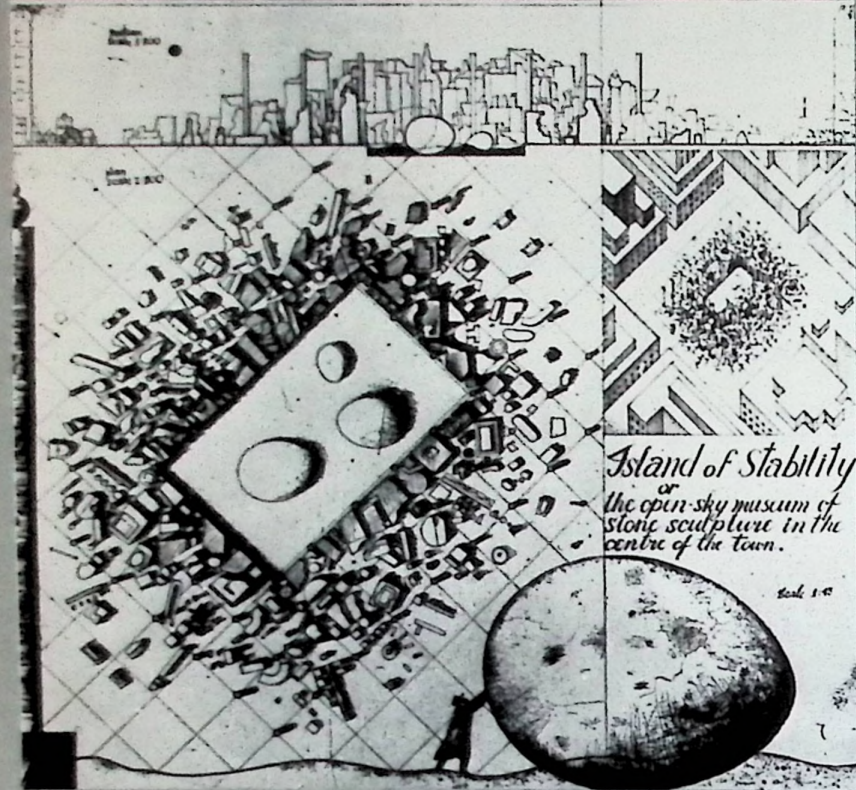
Incidentally, the young philosopher not only had come up with a novel and popular idea, but also had included detailed plans for its layout, complete with industrial enterprises, dwellings and services, and suggestions for the way the project could be funded—by young people them-

Above: A design for an arch-shaped city. Left: Alexander Brodsky and Ilya Utkin's conception of "counterpoint house," which is set among standard multistory buildings and busy traffic. Below: An architectural ensemble designed by a group of young Kirghiz architects. The design won one of the top prizes at a UNESCO competition.

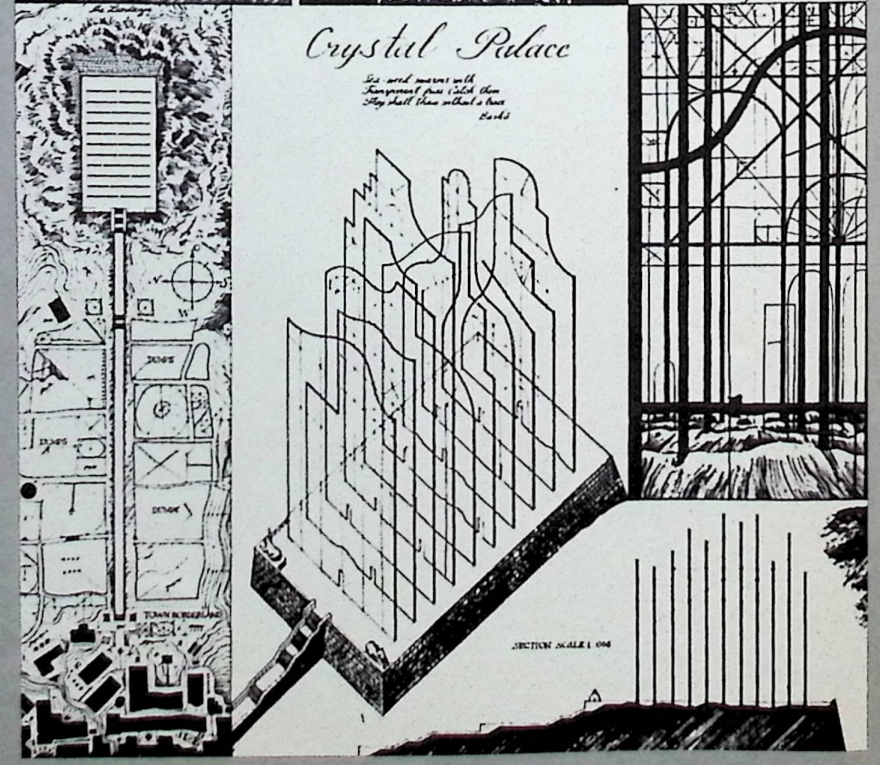
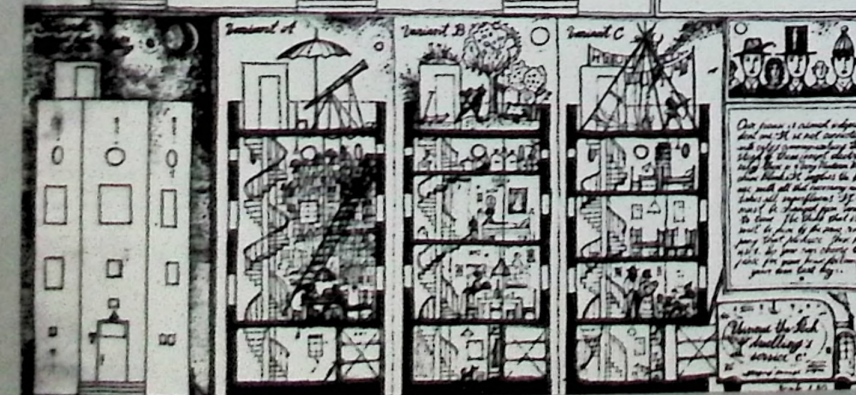
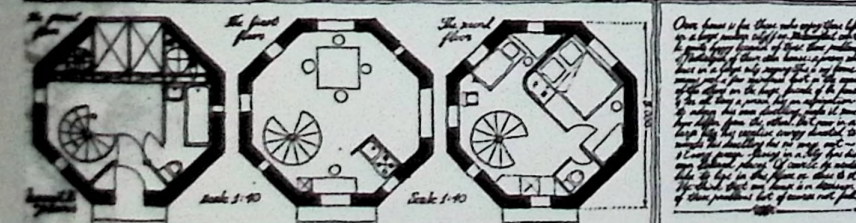
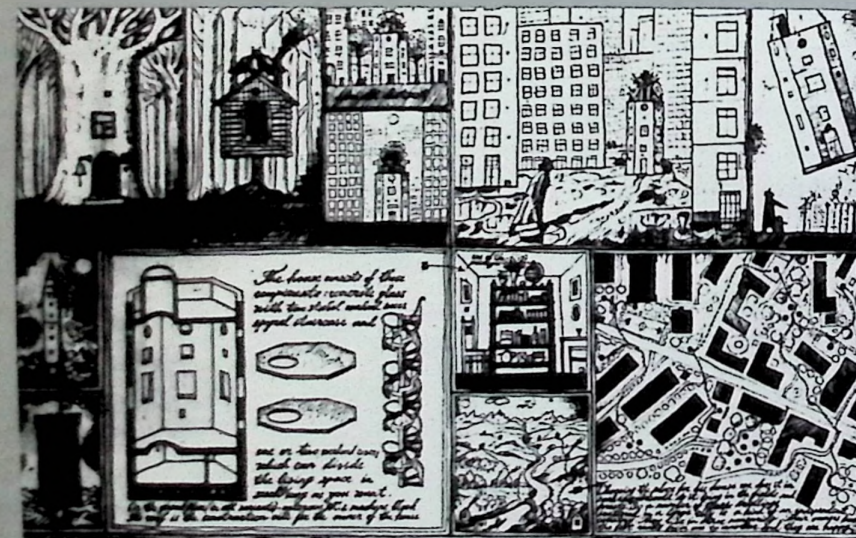
Combining Imagination and Practicality

How do young architects visualize towns of the future? For years they have been coming up with bold, romantic and sometimes wild ideas. Now they are facing an exciting real-life challenge. The youth town of Peaceville will give them a unique opportunity to apply their vision to solve problems of design.



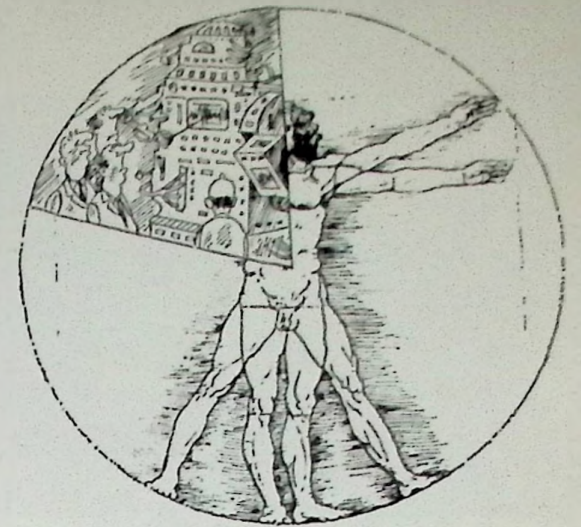


Clockwise from top left: A futuristic open-air sculpture. A humorous drawing of a single-family dwelling. Brodsky and Utkin's prize-winning Crystal Palace. Fantastic homes of tomorrow.





Young Moscow architects Alexander Brodsky and Ilya Utkin are well known for their plans for cities of the future. Their designs combine romantic elements with humor.



PROGRAM FOR THE COMPREHENSIVE STUDY OF MAN

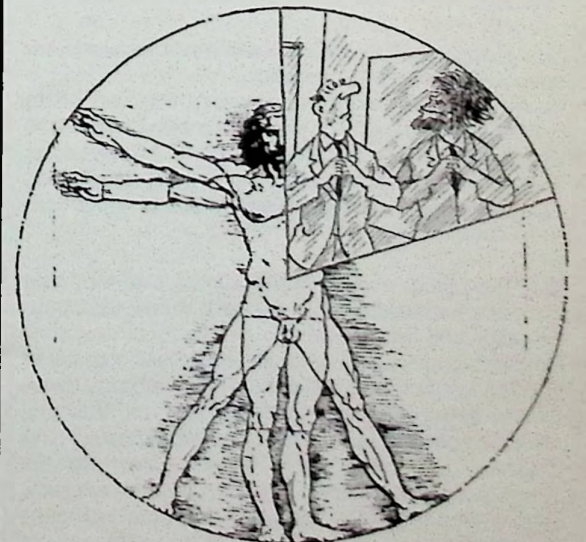
Drawings by Boris Dolya

The Presidium of the USSR Academy of Sciences recently established the Council for the Comprehensive Study of Man. It will coordinate scientific research into many aspects of human activity. SOVIET LIFE special correspondent Vitali Tret'yakov interviews the man chosen to head the council, Professor Boris Lomov. Professor Lomov is a corresponding member of the USSR Academy of Sciences and the director of its Institute of Psychology.

Q: Why was the council set up, and what is its purpose?

A: The latest trends in Soviet society are extremely encouraging from the scientist's point of view, and our council is their natural outgrowth.

Our main tasks will be to coordinate the work on a long-term, national program for the compre- ▶



selves. Young scientists could donate royalties from inventions, youth teams and student building teams could earmark a portion of their earnings, and so on.

"The third millennium will be here very soon, so let's start now creating tranquil oases, instead of hotbeds of tension," Rustem wrote. "As I see it, Peaceville could become somewhat of an experimental test grounds for scientific innovations, technological breakthroughs and progressive ideas."

The editors of *Komsomolskaya pravda* asked a number of prominent scientists, writers and public figures what they thought of the idea of Peaceville.

Yevgeni Velikhov, vice president of the USSR Academy of Sciences: The idea of constructing a youth town at the turn of the century offers a practicable, peaceful alternative to schemes threatening world civilization. If there is peace, there is the possibility for it to become a reality. Our younger generation surely has the stamina and creative drive to see it through.

Innokenti Ivanov, deputy chairman of the USSR State Committee for Construction: The idea is attractive and, more important, quite practical. Over 60 new towns will appear on our country's map during the current five-year plan period [1986-1990]. Is it easy or hard to build new towns, you might ask. Just one example—it took us 15 years to build Togliatti, a town on the Volga River. Today we have to complete projects like that in five years. And we do have some experience to rely on when we start building Peaceville.

Academician Dmitri Likhachev, literary historian: I like the idea immensely, but I want to stress two points in this regard. First, the idea implies responsibility. Everyone must keep in mind that the new town arising at the symbolic turning point of millennia will be a new cultural monument. Second, without an ethical climate in international relations, without peace and confidence in politics, any dreams for cultural prosperity are meaningless.

Dr. Yuri Senkevich, biologist, explorer and host of the popular TV show Travelers Club: An excellent idea! But where could the town be located? The ecological criterion should predominate here. It must be in harmony with the environment; it must preserve it and improve it.

Chinghiz Aitmatov, Kirghiz writer: Last year we celebrated the anniversary of an event that made us realize the unseverable link between

yesterday and tomorrow. The fortieth anniversary of victory in World War II brought out in bold relief our responsibility to the coming generations. What do we have to offer the twenty-first century? I see Rustem Khairov's idea as a tangible and inspiring opportunity to answer this question. May the town inherit the traditions of the precious monuments of the past, and may it carry them into the centuries to come.

Two or three days after the contest was announced in *Komsomolskaya pravda*, letters began pouring into the editorial offices by the thousands. The location of the new town was the most popular topic. Places all over the country were suggested, but the main point was what it should be like.

This is what the Shipkovs, both husband and wife are architects, from Moscow, wrote: "Peaceville must go up at the turn of the next century. If it is born in the year 2000, it will reach maturity in 2017—the 100th anniversary of the October Revolution—thus marking the first century of socialism."

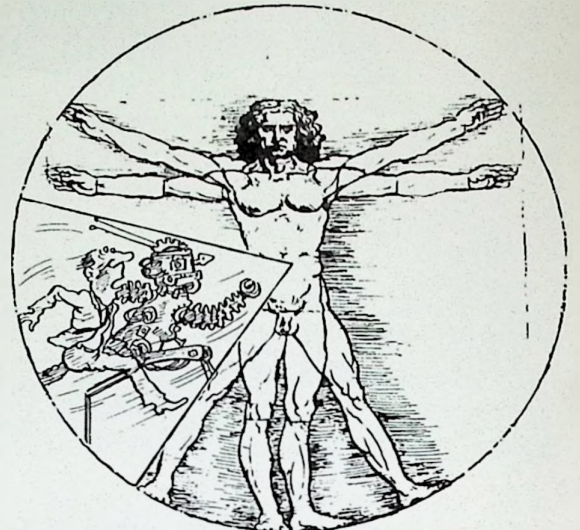
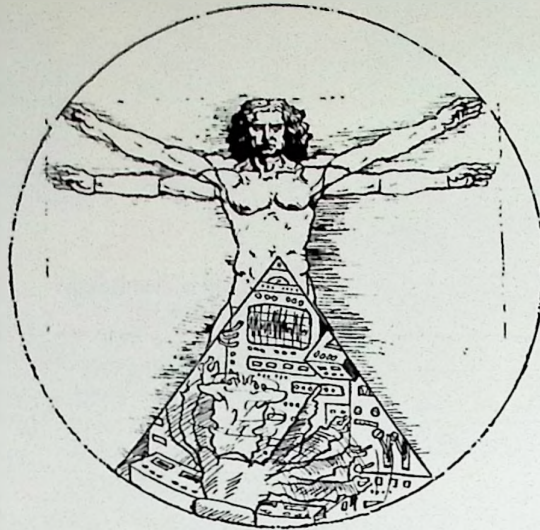
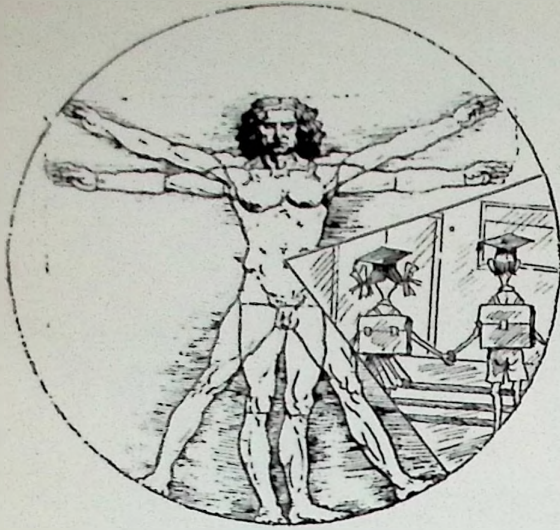
Valeri Voronkov, a worker from Berdyansk, a town on the coast of the Sea of Azov, wrote: "Internal combustion engines will be out of place in the town of tomorrow. The future belongs to electric, pneumatic and other such vehicles. The best thing would be to place communications networks in underground tunnels or overhead viaducts, leaving the ground for pedestrians."

Sergei Mikhailets, a college student in building from Dnepropetrovsk, the Ukraine, came up with an idea for a multistory house with hung floor construction, removable partitions and improved heat and noise insulation systems.

An interesting letter was received from the Institute of Architecture in Moscow: "Why should only one town be future-oriented? We Soviet young people must build not one symbolic town but a country full of towns of tomorrow. Why not have a contest of ideas for all Soviet cities and towns? That would provide an impetus to enhancing them, to protecting the environment and to improving working and living conditions."

Besides new ideas the paper also received thousands of offers from young people ready to donate time and money to the effort. Schoolchildren from one village wrote: "We are starting today to work on the farm after classes and on weekends to earn money for the construction of Peaceville."

The USSR Architects Union and the USSR State Committee for Construction have also lent their support. A state commission made up of *Komsomolskaya pravda* journalists, construction experts and sociologists has been set up to study all of the ideas that have been submitted. ■



hensive study of man and to supervise its implementation. The council will also encourage progress in some disciplines, which until recently have been in the background: for example, certain branches of genetics and social psychology, the broad area studying the relationship between man and computers, as well as some others that are just now coming into the limelight.

First, we must look at the influence of the human factor on socioeconomic processes under socialism.

Second, we must determine man's relationship to the sweeping changes taking place in science and technology. Here, two particular areas have not been inadequately studied: the impact of the scientific and technological revolution on daily routine and on mental and physical health and the influence of technology on human ability and potential.

Third, we must study personality development and work out a specific socialist view of the individual's place in society.

Fourth, we must take a look at various social groups, ranging from the family unit and minor social groupings including informal ones, via production and other big collectives, to major social strata, ethnic groups and classes.

Fifth and last, we must conduct an all-around study of the brain and the psyche.

Q: When is the council expected to begin its work?

A: The council will draw up an outline for the program before the end of the year. Later it will work out a detailed agenda, which will be presented for wide-ranging expert discussion. We will begin implementing the program within the present decade. It's a formidable task, implying that a human factor research network be set up nationwide.

Q: I suppose the council will have to work out a specific program of action.

A: You're quite right. The main thing will be to make the studies truly all-embracing from the start. We'll have to gather experts from various fields into task forces, thus involving thousands of specialists in the development and implementation of our program.

Q: You are a psychologist. Does the fact that you will be heading the council mean that psychology will dominate?

A: Many scholars give psychology pride of place among the social sciences. Psychology integrates everything that pertains to man. The Political Report of the Central Committee of the Communist Party of the Soviet Union to the Twenty-seventh Party Congress earlier this year states that time is what sets the social sciences to broadly tackling the concrete requirements of

practice and demands that social scientists be sensitive to the ongoing changes in life, keeping new phenomena in sight and drawing conclusions that would correctly orient practice.

Q: Isn't there an overemphasis on psychology, in particular, behavioral issues?

A: Life—both for society and for the individual—has grown much more complicated than it used to be. Proceeding from the global to the personal—this involves millions of people—in our studies of society, we see all the more clearly that it's vital to take thorough account of the psychological factors.

Today production puts greater and greater demands on the human intellect, stamina and emotions. Operators of sophisticated automatic systems face more and more responsibility: Any mistake might cause a disaster or put machinery costing many millions of rubles out of action.

Even if we keep emergencies out of the picture, we see that a worker's stamina and emotions are economic categories.

Q: So our traditional concepts of man at work are largely outdated?

A: Right. Both job conditions and the job itself have changed.

First, we must supervise and control more projects and processes and on a much larger scale than ever before, often simultaneously.

Second, the human-controlled processes have speeded up. More often than not we are working against time. Hence, emotional tension. Sometimes the exact opposite is the case: A very slow process dulls the brain, raises sensitivity thresholds and slows down reaction time, in short causing what is called psychological immobilization.

Third, often sophisticated technology is operated in adverse conditions—under high or low atmospheric pressure, in inadequately heated or cooled shops, in noisy surroundings, or with inadequate ventilation, and so on. These conditions have an effect on the human psyche.

Fourth, operators often cannot immediately observe production processes. Various devices encode the appropriate data.

These trends arouse a multitude of questions about the potential of the human psyche and physiology. For example, how quickly, pre-

cisely and dependably can a person decipher instrument readings? Which way of transmitting information is best adjusted to our psychological makeup?

If we don't take psychology into consideration when designing new machinery, we will inevitably make mistakes when operating it.

Q: Why always production? What about distribution and consumption? Can the Comprehensive Study of Man help in other spheres, too?

A: Distribution and consumption have given rise to services, a relatively independent area of community life. Since it is closely connected with man, it deserves painstaking study.

Consider our needs and the market demand arising from them. The study of these factors requires the combined efforts of economists, sociologists, psychologists and other experts. Economics and sociology study the evolution of demands in major groupings and in society as a whole. Social trends, cultural background and individual preferences influence our wants. Even our individual criteria change with time.

It is vital to study the correlations among demands, interests and tastes in order to tackle the task of providing services.

Q: What will the program do for the human factor in education?

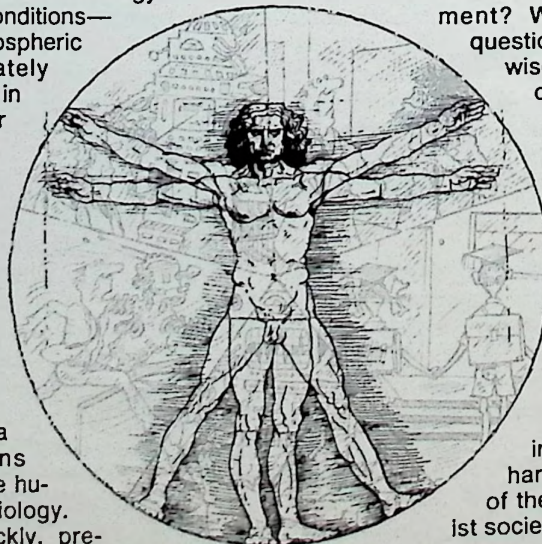
A: It is extremely important to know the working patterns of perception, memory, cognition, habit formation, the nature of talent and mental development as a whole in order to gain knowledge of ourselves.

What should we teach a contemporary school student? What will schools receive from the vast stock of scientific information? What are age dynamics and potential in mental and emotional evolution? Are there limits to ability development? We often answer these

questions based on our worldly wisdom, superficial and inaccurate as that may be.

Sometimes we are too enthusiastic, then unduly pessimistic, in our estimations, and the study process offers either too little stimulation, which slows down intellectual development, or too much stimulation, which can be bad for our health.

The Comprehensive Study of Man will be of importance in forming the harmonious personality, one of the chief tasks facing socialist society. ■



**"Druzhba" and
"friendship"
mean the same.**

**Right: Scenes from
Sports Day—a
fun-filled holiday
at the camp. Below:
Soviet and American
youngsters place
messages of peace
and friendship in
bottles before setting
them out to sea.**



**Smiles and tears. Young
Pioneers say Good-by
to Jane Smith and the
American schoolchildren
on their departure from Artek.**



**"I'm convinced that children should meet, get acquainted
and learn to trust each other—Soviet and American
children," said Jane Smith. And, as this picture
shows, the children who accompanied her certainly agreed.**

SAMANHA *Continued from page 21*

shakes and first interviews. After that, the young girl was whisked away in a big shiny car, and blocks of white buildings, bridges and boulevards full of people flashed past her.

Then came the trip to the Young Pioneer camp—Artek—on the coast of the Black Sea. She saw tall cypresses and smelled the sweet scent of unfamiliar grasses. But more important, she saw children like herself, cheerful and friendly. She made many friends at Artek and gathered many new impressions.

Later she visited Leningrad. Along with the grand old palaces and the white nights of the northern city, she saw the Piskaryovskoye Cemetery, with its mournful silence, the traces of shelling on Anichkov Bridge and a sign: "This side of street is dangerous during artillery fire."

At one of her press conferences Samantha said: "In the United States we're told that the Russians want war. We Americans know little about Russians and war. Our streets never had signs indicating which side was safer during artillery fire, and our grandmothers didn't have to warm their inkwells with their breath when they were doing their lessons. Can a nation like Russia want war?"

Jane Smith, Samantha's mother, smiled during the concert given by the Young Pioneers but her eyes revealed sadness.

"Samantha was an ordinary child," Jane Smith began. "You know how she happened to write the letter to Mr. Andropov? When he was appointed General Secretary of the Central Committee of the Communist Party of the Soviet Union, *Time* magazine carried his photo. I showed the picture to my daughter, and she told me to write a letter to the Soviet leader so he'd know what we think about war. 'Why not write it yourself?' I countered. And she wrote one."

In the letter Samantha asked: "Why do you want to conquer the world or at least the United States?" Yuri Andropov answered: "We want nothing of the kind. . . . We want peace for ourselves and for all people of the planet, for our own kids, and for you, Samantha." The Soviet leader invited her to come to the Soviet Union.

Did the questions about the peace-loving aspirations of the Soviet people still remain after visiting the Soviet Union? "Absolutely not," Jane Smith answered emphatically. "We were fully convinced that the Soviet people are doing all they can to preserve peace."

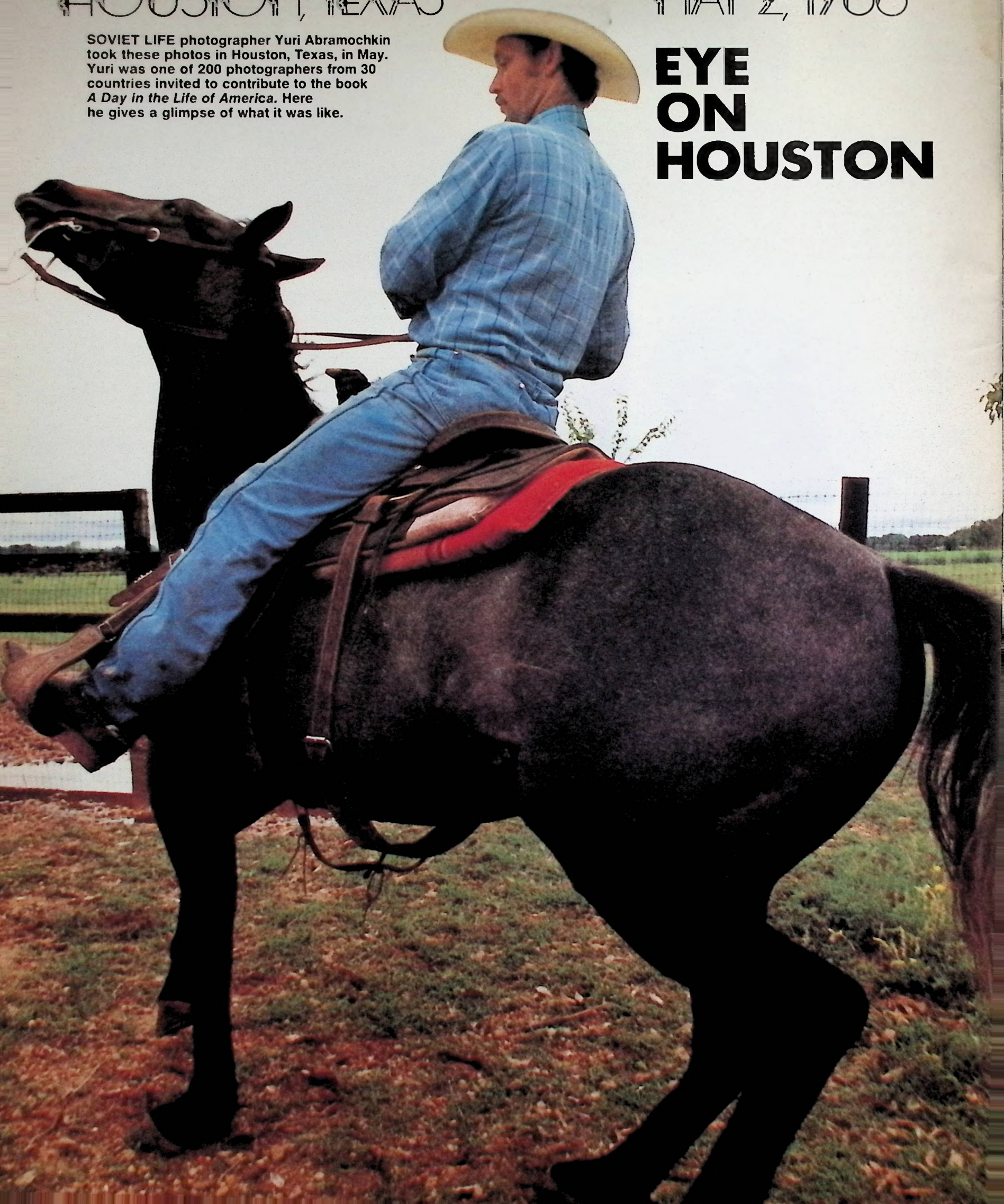
Asked what was the most important thing in her life today, Jane Smith answered that it was working for the Samantha Smith Fund, which was set up in her home state of Maine last year. "In this way I will carry on my daughter's cause. I'm convinced that children should meet, get acquainted and learn to trust each other—Soviet and American children." ■

HOUSTON, TEXAS

MAY 2, 1986

SOVIET LIFE photographer Yuri Abramochkin took these photos in Houston, Texas, in May. Yuri was one of 200 photographers from 30 countries invited to contribute to the book *A Day in the Life of America*. Here he gives a glimpse of what it was like.

EYE ON HOUSTON





New York, then on to Denver—where all of the contributors had gathered before going on assignment—to Houston, New York and home again, 15,000 miles in all.

When I arrived in Houston, it was pouring. Sunny Texas was giving me quite a welcome! The next day it drizzled, with the Sun penetrating the dense clouds now and then. I shot a panorama of a Houston rush hour from an ABC helicopter during a downpour.

I started working the following morning at six. Accompanying me was my guide and interpreter, Peter Fischer, a professor of Russian language and literature at the University of Houston, in whose hospitable home I spent two nights.

I like taking closeups of faces, especially eyes. It's said that the eyes are the window of the soul, and through one soul you can see the soul of a nation. That's why I focused my camera on people and faces, like the face of famous heart surgeon Michael de Bakey at the Baylor College of Medicine; of businessman Jubal Parton whom I visited at his ranch outside the city; of university students rushing between classes; and of researchers at NASA.

I will be happy if readers enjoy my pictures as much as I enjoyed taking them. ■

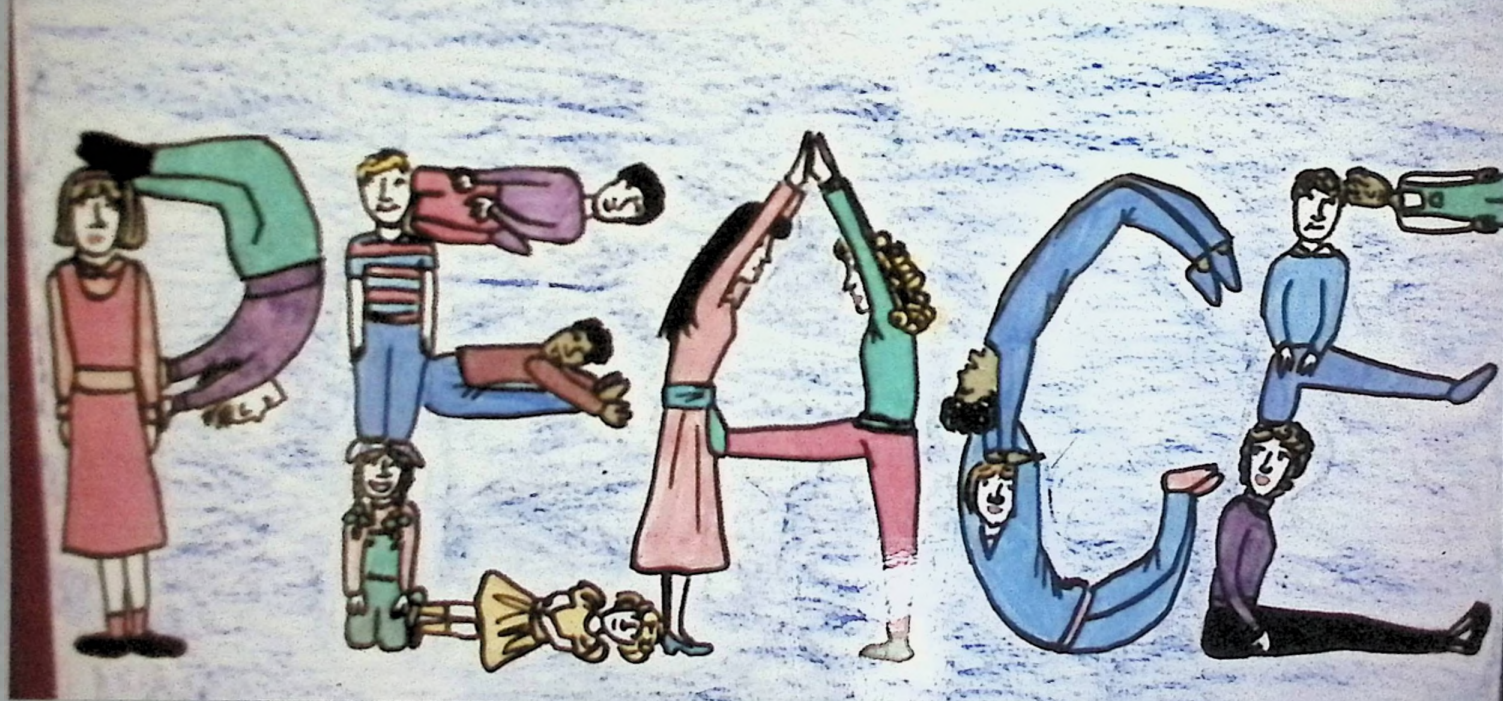
I had been to the U.S. several times, but never to Texas, which attracted me like a magnet. So I was happy when the book's sponsors agreed to send me there. As I was flying to Houston, I kept thinking about the job that lay ahead. I was to get shots of the University of Houston, the NASA Space Center, the Baylor College of Medicine and the Rattlesnake Ranch not far from the city. As for other subjects, I was free to choose anything I found interesting. The only thing limiting me was time—24 hours. Never in my 30 years as a photographer have I come up against such a challenge. The idea of working without stopping intrigued me. It would really be something! Sort of an endurance test. And, honestly, I liked that.

The arrangement turned out to be quite interesting, and I'd like to do it again. When everything was done, I was satisfied, even though dog-tired after the endless flying from Moscow to



A WORLD WITHOUT WAR

EVERYONE CAN PLAY A PART IN WORLD



A drawing by 11-year-old Eva Reiner of Connecticut. Below: Marion Packet, 11, of Georgia, titled this picture *Together We Can Make Things Happen.*



Thirteen-year-old Heidi Sheridan, who made this picture, lives in Idaho. She hopes to have pen pals in the USSR. Right: Finish by Sergei Matyukhin, 10. He's from Orel, the USSR.

A colorful exhibit of children's drawings devoted to the world's first Goodwill Games, held in the USSR in July, was on display at the Palace of Young Pioneers on Lenin Hills in Moscow. Like the Games themselves, the exhibit was organized by people in the Soviet Union and the United States, although representatives of many other countries participated in both events. The drawings were made by children born in the past 15 years—dramatic and turbulent times—yet all of the creations depicted a world filled with color, games, sports and friendship. Centrally displayed in the exhibit was a picture of Samantha Smith, smiling, wearing a Russian headdress and sarafan. This charming young girl is no longer with us, but her mission of peace and friendship, begun three years ago, has been continued by another ambassador of peace, Soviet schoolgirl Katya Lycheva, who visited the United States earlier this year. The entire exhibit of children's art conveyed a spirit of unity. Though the Palace of Young Pioneers was not directly involved in the Goodwill Games, its exhibit was a major attraction for visitors to the city. ■

BUILDING BRIDGES

SOVIET-AMERICAN CULTURAL CONTACTS RENEWED

By Alla Butrova
USSR Ministry of Culture

International cultural contacts are crucial for the progress of world civilization, yet history gives us few examples of such forced alienation of nations as has existed between the Soviet Union and the United States. Nevertheless, our cultural exchanges have generally run smoothly in the past, corresponding to the general level of Soviet-American relations and promoting détente.

Since the first intergovernmental agreement on scientific, educational and cultural exchange was signed between the Soviet Union and the United States in 1958, more than 80 Soviet troupes have toured the United States. Touring groups have included the Bolshoi (Moscow) and the Kirov (Leningrad) ballet companies, Igor Moiseyev's USSR Folk Dance Company, the Beryozka Dance Company, leading Soviet symphony orchestras, the Moscow Art Theater, the Obraztsov Puppet Theater and several circus companies.

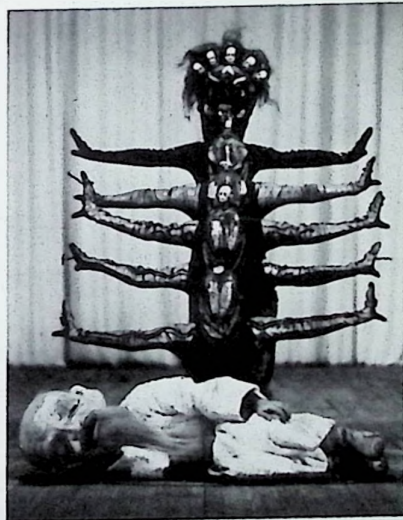
American artistic groups visiting the Soviet Union have included the Boston, Philadelphia, New York, Cleveland and other symphony orchestras; the New York City Ballet and several other ballet companies; student choirs and orchestras; the Arena Stage Theater; and, last but not least, Benny Goodman's and Duke Ellington's jazz bands.

Exhibitions have been exchanged on a large scale. Among the

unique collections displayed in the United States were "Russian and Soviet Painting from the 15th Century to This Day," "Russian Art: 1800-1850," "Treasures of the Moscow Kremlin Museums," "History of Russian Costumes" and "Masterpieces of Italian Painting from the Hermitage." The American public was enthusiastic about all of these exhibitions.

Our country greeted the reciprocal American exhibitions with equal enthusiasm: "A Hundred Masterpieces from the Metropolitan Museum," "Pre-Columbian American Gold," "American Realist Painters of the Latter Half of the 19th Century and the 20th Century," "Art of Antiquity from the Metropolitan Museum" and "Masterpieces of Italian Painting from American Museums."

When our contacts broke off, American museums, universities, impresarios and the public sent hundreds of letters of regret to the Soviet Union. The renewal of cultural contacts, thanks to a Soviet-American agreement that was signed during the Geneva summit



Soviet groups that will participate in the cultural exchange program include (top to bottom) the Moscow Virtuoso Ensemble, led by violinist Vladimir Spivakov; the State Academic Folk Dance Ensemble, performing a dance from the Mongolian fairy tale "Tsam"; and the Bolshoi Ballet, featuring Natalya Bessmertnova and Irek Mukhamedov in a scene from *The Golden Century*.

Photographs by Igor Boyko

last November, occasioned great satisfaction. The agreement entered into force on January 1, 1986.

Shortly before that, a children's theater from the Empire State Institute for the Performing Arts in Albany, New York, arrived in Moscow to give 10 performances. The children's theater invited the Children's Music Theater in Moscow, under the direction of Natalya Sats, to the United States on a return tour.

Soviet companies and individual performers were invited to the United States one after another. On January 7 Yuri Temirkanov, chief conductor of the Kirov Theater, and pianist Nikolai Petrov flew to New York to perform with the New York Philharmonic Orchestra. Americans admirably rediscovered these musicians.

Young Soviet dancers took part in the Third International

Ballet Contest in Jackson, Mississippi. Yuri Grigorovich, artistic director of the Bolshoi Ballet, co-chaired the jury with Robert Joffrey, the contest organizer.

The Soviet public looked forward to the tour of the Philadelphia Symphony Orchestra, one of America's best. Regrettably, the orchestra suddenly canceled the engagement, even though full agreement had been reached with its management. But Moscow and Leningrad were brilliantly compensated: The renowned pianist Vladimir Horowitz, born and educated in Russia, performed there. The 82-year-old maestro greeted his native land with emotion, and the public gave him endless standing ovations.

The long-awaited exchange of art exhibitions was also renewed. Participating Soviet museums were the Hermitage (Leningrad), the Pushkin Museum of Fine Arts (Moscow), the National Gallery of Art (Washington, D.C.) and the collection owned by Armand Hammer, industrialist and patron of the arts.

The USSR Ministry of Culture has reached an understanding on a long-term program for further exchanges with the Smithsonian Institution, the Metropolitan Museum of Art (New York), the Art Institute of Chicago and several museums in San Francisco.

Americans are eager to see Soviet touring companies. The Kirov Ballet triumphantly performed in Los Angeles, Washington, D.C., and New York last May and June. America's favorite, Igor Moiseyev's USSR Folk Dance Company, was greeted with the usual enthusiasm.

The USSR State Symphony Or- ▶

chestra under Yevgeni Svetlanov is scheduled to tour several American cities with Russian classical and contemporary Soviet programs.

Sarah Caldwell, conductor of the Opera Company of Boston, initiated an interesting project to acquaint her compatriots with the Soviet composer Rodion Shchedrin. She is arranging for the staging in Boston of his opera *Dead Souls*, based on Gogol's work of the same name, and of his ballet *The Lady with the Dog*, based on Chekhov's novella. Maya Plisetzkaya, world-famous Bolshoi prima ballerina, is to perform in this production.

The year to come will be no less exciting for theatergoers and

music lovers. The United States will host the Bolshoi Ballet, the Moscow Virtuosos Ensemble, the USSR Chamber Orchestra, the Obraztsov Puppet Theater and well-known soloists.

The United States will reciprocate with tours of eminent performing musicians, chamber orchestras and the San Francisco Symphony Orchestra. Soviet-American cultural contacts give millions of people in both countries access to eternal spiritual values. We grow to know each other better, and that benefits both nations. For the sake of mutual confidence, the process will be carried on and extended. ■

TOURISM FOR PEACE

By Alla Komplektova
American Department Chief
Intourist

Once a privilege of the elite, tourism has become a vital need for millions of people. Five million tourists come to the Soviet Union every year. Regular tourist exchanges between the Soviet Union and the United States have been developing since 1929, when the foreign travel agency Intourist was set up in this country. It now has arrangements with 150 American firms.

Favorite tourist attractions include Moscow, Kiev and Leningrad,

the Caucasian republics, ancient Russian towns such as Suzdal and Novgorod, Central Asia and Siberia. Also popular are Volga and Dnieper river cruises and special tours to arts festivals, such as Russian winter concerts with troika rides and clown acts.

One of Intourist's most active and long-standing partners (since 1934) is American Express.

General Tours arranges weekly trips to the Caucasus, to Central Asia, to Siberia, to Black Sea



At the Tchaikovsky International Music Competition held in Moscow in June and July 1986, the silver medal was awarded to American singer Barbara Kilduff (top), and a special prize for the best performance of the obligatory piece by a Soviet composer was awarded to a young American violinist, Michaela Paetsch (bottom).

health resorts and to other places of interest. In 1987 the firm will add Ordzhonikidze (the Northern Caucasus) and Rostov-on-Don (Southern Russia) to its routes.

Academic Travel Abroad organizes river cruises, Russian language seminars and other tours connected with the history and literature of our country.

Thousands of medical personnel, architects and lawyers who arrive in the USSR through the agency of Professional Seminar Consultants have an opportunity to talk shop with their Soviet colleagues in addition to the usual general sightseeing.

Anniversary Tours plans trips for delegations from sister cities, for peace champions and for youth groups.

Many firms cater to business people traveling to the USSR

to confer with foreign trade organizations or to attend exhibitions, symposiums and conferences. American Express, Cosmos Travel and Five Star, all in New York; Margos International and Beverly, in San Francisco; and Atlas Travel, in Houston are examples.

The Committee for Tourism of the American-Soviet Trade and Economic Council meets annually to review transportation links, tourist exchange and cooperation in the hotel business, in insurance and in currency services.

We receive many letters from individuals and from travel agencies appraising our services. Here are some of their remarks:

"Clearly the wonderful cooperation of Intourist Moscow and Intourist New York is responsible for the success."

Harriet Friedlander, President
Academic Arrangements Abroad

"I would like to thank you for organizing such a successful tour for us this year—our clients were very happy with the time they spent in the USSR."

Alison Thomas
Travelers

"I just want to thank you for taking such good care of our last group. . . . They had an absolutely grand time. I don't know how you do it, but every trip comes back happier than the one before, if that is possible."

Mary Harold
Osborne Travel

Intourist also deals with foreign tours for Soviet citizens. This year, for instance, people of different professions took part in the Mississippi Peace Cruise.

The resumption of direct air travel between the United States and the Soviet Union in April 1986 will stimulate tourist exchange.

Our motto for 1986 is "Tourism for Peace on Earth." We want our contacts with our American counterparts to promote mutual understanding and trust between the peoples of the Soviet Union and of the United States. ■

An American bicyclist, Steve Rowner, completed a supermarathon in 1986 from San Francisco to Moscow. He is shown here riding through Moscow.



CHUKOTKA AND ALASKA

Northern Neighbors

Chukotka, the diminutive for Chukchi Autonomous Region, occupies 737,700 square kilometers in the northeastern part of the Russian Federation. The people who live there are the first ones in the Soviet Union to greet each new day. Only the 40-kilometer-wide Bering Strait separates them from Alaska. Geographic location is not the only thing the Eskimos of Chukotka and Alaska have in common. Their climate is similar, their languages are closely related, and they even have the same customs and culture. Our well-illustrated article "Report from the Edge of the Earth" deals with the past and the present of the Chukchi, a people who, like the Eskimos, are indigenous to the area.



A HOUSE FOR THE PRIGOZHYS

Building Cost—120,000 Rubles

The house Inna and Nikolai Prigozhy and their 17 children live in was built especially for them by the Vitebsk Soviet of People's Deputies. It has 16 rooms, two large verandahs, a kitchen, a laundry room and a bathhouse. They also have a garage, storerooms and other conveniences, including a very large refrigerator, a fine color TV and a mini-bus. Read in the December issue about how an ordinary worker manages to keep up a house of this size and feed, clothe and educate 17 children.

COMING SOON

Special Issue on Leningrad

A banquet of color and joy—the opening ceremony of the Goodwill Games in Moscow, July 4, 1986.

